[From Crooke's A Description of the Body of Man. London, 1631]

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SIR WILLIAM BOWMAN, BART., F.R.S.

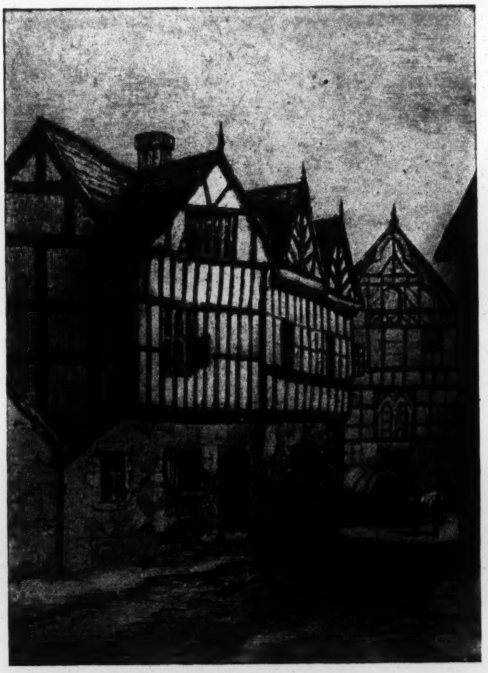
ANATOMIST, PHYSIOLOGIST AND OPHTHALMOLOGIST

By BURTON CHANCE, M.D.

PHILADELPHIA, PA.

THE rapid development of the science of ophthalmology in the latter half of the nineteenth century constituted an epoch in the history of the medical art. Three names are preeminent in the long list of those whose contributions to the science formed the groundwork of that epoch, von Graefe, Donders and Bowman, each of whom while still in his early twenties produced work of unexampled novelty and accuracy. It is with the desire that the younger men of this generation might be induced to inquire into the antecedents of their present teachers, as well as the wish to detail the lives of truly noble men, that biographical sketches of the three named have been projected and offered for publication in the Annals of Medical History.

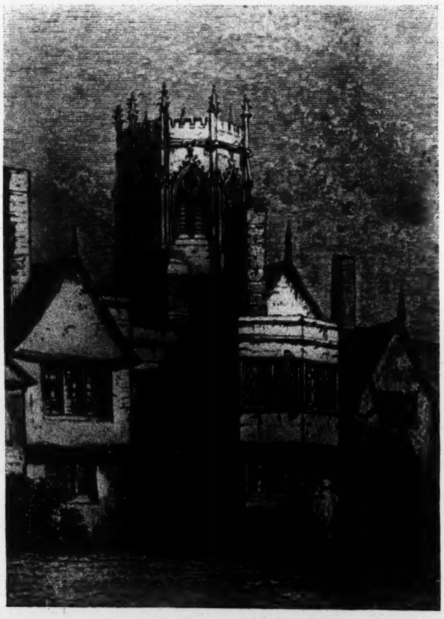
The first memoir refers to one who before attaining the age of twenty-six had won for himself a leading position amongst the most eminent anatomists of his time as a microscopist of first-rate ability, and the discoveries he then made, with the conclusions he drew from them, have ever since exercised an important influence in practical medicine, and have served as models for all subsequent and similar investigations. Later in life he became distin-



Old Houses, Nantwich

guished as an original investigator in physiology, and as a teacher of that subject, and at a still later period, devoting himself to a special branch of his profession, he stepped naturally and easily into the position of leader and representative of ophthalmic medicine and surgery, holding the same position in England, though for a far longer period, that was occupied in Germany by his friend von Graefe, and in Holland by his still more intimate associate, Donders.

William Bowman was born on July 20, 1816, in the historic town of Nantwich, Cheshire, with its quaint old timber houses and the glorious fourteenth century parish church, and once famous for its salt mines and brine baths. He was the third son of John Eddowes Bowman, a banker, who found time to be so much interested in botany as to be worthy of fellowship in the Linnaean Society and to become a geologist of more than ordinary attainments. He was, moreover, a careful and minute observer in a wide range of study; a clear and vigorous descriptive writer, and a good artist; the illustrations of some of his papers were engraved from his own drawings.



Church Tower, Nantwich

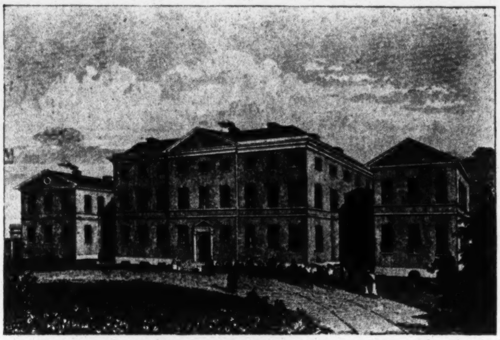
Bowman's mother was a good draughtswoman and painter of flowers, who could copy in wool-work a flower from nature. In his boyhood William studied botany and geology with his father and drawing from both parents. A disposition for earnest study and for high mental and moral culture prevailed in his home, and all his brothers were in their several ranges of work successful and esteemed; one was a professor of classics; one an architect; the third a professor of chemistry. They all died before him.

At the age of ten, Bowman and his two brothers were sent to the once famous Hazelwood school, near Birmingham, kept by a Mr. Hill, a highly intelligent but eccentric man, who took great pains in instructing his pupils. Among the family records is a report which the master drew up for his own guidance, showing in a very exceptional manner the attainments and capabilities of the lad William. A magazine was started, the setting up of the type and the printing being entrusted to the boys of the school, many of the sheets and articles being signed by Bowman, as printer. He seems to have inherited habits of accurate observation from both parents, and even at this early period he was deft of finger. A model of the schoolhouse made by his clever hands for years stood in the library of a fellow scholar who became one of the distinguished citizens of Birmingham.

When about sixteen years of age Bowman left school and was apprenticed to Mr. Joseph Hodgson, a member of the Society of Friends, a learned and skilful surgeon of the Birmingham General Hospital, whose practice extended widely through the midland counties. It is said that Bowman's desire to enter the medical profession was immediately due to the interest he took in the treatment of a wound of the hand he had accidentally inflicted on himself in the laboratory while experimenting with gunpowder. It was his admitted "boyish ambition, under the inspiration of an old friend of his father's, and others to whom he was deeply beholden, to be a great surgeon."

It is probable that, after the manner of the time, "a deed of apprenticeship" to "learn the art and mystery of a surgeon and apothecary" was drawn up with the payment of a premium of one hundred guineas. The term of apprenticeship then required by the Society of Apothecaries was five years. One wonders in reading the biographies of famous medical men what an apprenticeship afforded to the students which led them on to the heights they then attained. And one stops to contrast the present with what was then an efficient method of education. Doubtless many things of great utility in after life could be thoroughly learned, things of which the ignorance is now a frequent hindrance to success, not the least of which being the keeping of accounts and the acquiring of business habits needed for practice. Sir James Paget, a contemporary and dear friend of Bowman, in his memoirs gives an interesting account of his own course during his apprenticeship in London, 1830–1834. The apprentices had four years of as complete hospital education as was then possible; they were under the guidance of hospital surgeons who were at least able to teach them well and they were generally sons of those who were rich enough to make their education in every way complete and their education might be taken as a guarantee of fitness for duty.

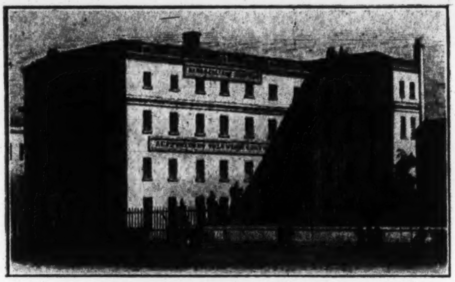
At this period of British medicine only three years of study were required by the College of Surgeons, the first two of which were directed to be spent mainly in the study of anatomy and physiology. To these subjects Bowman accordingly devoted himself with much earnestness and the knowledge he acquired stood him in great stead in after years. He also gave much attention to pathology as well as to practical surgery, for he appears to have felt what he well expressed in an introductory lecture delivered twenty years later at King's College, that if a knowledge of anatomy is desirable for the student, the practical knowledge of disease and its treatment which the wards of a hospital supply is far more important, still more indispensably necessary to him. Mr. Hodgson was an able teacher and an earnest worker.



GENERAL HOSPITAL, BIRMINGHAM, 1829

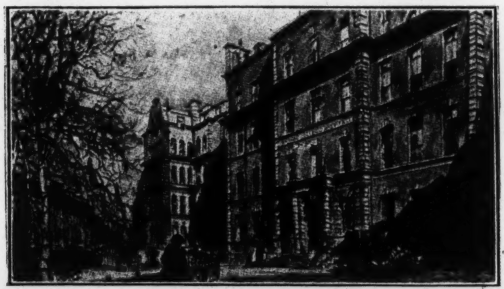
The hospital, in which Bowman was a house pupil, supplied large numbers of cases which he could observe and record. He worked unceasingly in the wards and in the post-mortem room, and made detailed records and drawings of the conditions found. Undismayed at the act of placing his ideas upon paper and, from his practice at school, of committing it to the printer, he wrote a monograph entitled, "Note on Influenza as it occurred in Birmingham in 1833," as well as other papers, which, however, being necessarily crude and immature, he did not think it desirable to publish, yet in looking over one of them shortly before his death he was surprised to find out how much he then knew, and how he could hardly have expressed himself better with his maturer knowledge. Thus encouraged, Bowman studied constantly and carefully, and made many records of cases and pathological drawings, some of which were published in 1834 in illustration of Ryland's "Essay on Diseases of the Larynx and Trachea." The records of the cases and the colored engravings appear alike accurate, and are at least remarkable as the work of a student only eighteen years old! The drawings made at this time and reproduced in the memorial volumes containing his collected papers, published in 1892, are well executed and would prove creditable to any book on the subject published in the present day.

He appears to have made a series of measurements of the orifices of the heart at this time, at the instance of a friend who subsequently, to show his appreciation of this and some of Bowman's later work, presented him with a fine microscope which for many years remained in beautiful order and preservation. I fancy it is the one shown under the belljar in his portrait by Ouless. It was while at the Birmingham Hospital that he began his work with the microscope and his fruitful study of pathology; in after-life he recalled his old Birmingham associations very generously.



King's College Hospital
(1839)

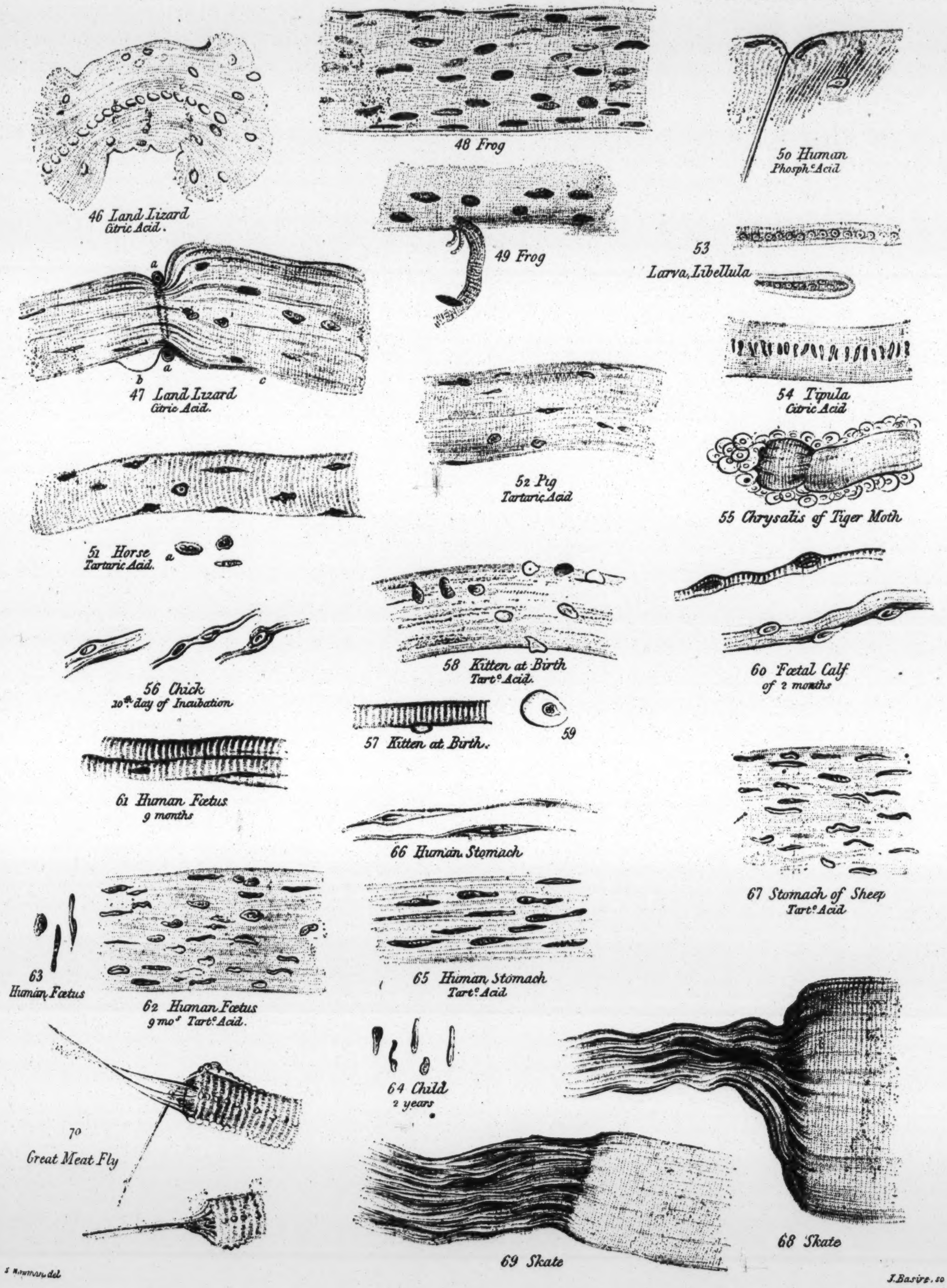
In 1837, in the first year of the reign of Queen Victoria, he went up to London, where he joined the medical department of King's College as an advanced student, in the next year succeeding to the post of Physiological Prosector. He soon formed valuable and lasting friendships among the advancing men of the day. In 1838 he visited the hospitals of Holland, Germany, Vienna, and Paris; on his return he was appointed Demonstrator of Anatomy and Curator of the Museum. In 1840 he passed his examination at the Royal College of Surgeons, and in 1844 was elected a Fellow. In 1840, soon after the founding of King's College Hospital, Bowman was made Assistant Surgeon, but after a few years, from the pressure of private practice, he was compelled to give up his appointment although he did not relinquish his connection with the College, serving as Professor of Physiology and of General and Morbid Anatomy and, from 1879 until his death, as a member of the Council.



King's College Hospital
(1861)

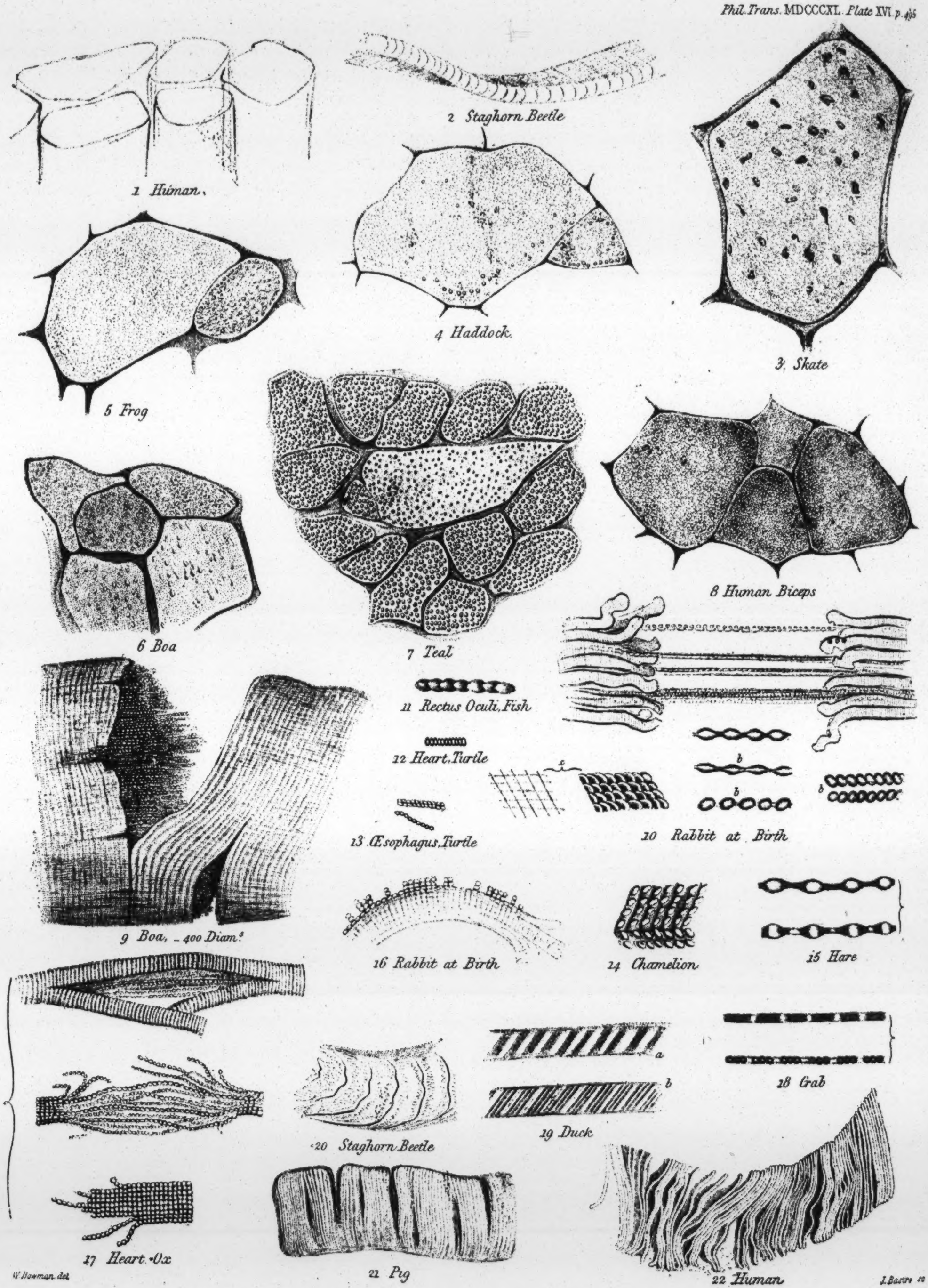
The greater part of Bowman's career belongs to the history of medicine in the nineteenth century, and his name has become classic to practitioners in the past seventy-five years. The scientific and literary work accomplished during the three years 1839–1842 included his original investigations which were illustrated with engravings from his own drawings, on "The Structure of Striated Muscle," and on "The Structure of the Kidney" which were read before the Royal Society, and on "The Structure of the Mucous Membrane of the Alimentary Canal" for the "Cyclopaedia of Anatomy and Physiology." In 1843, appeared the first part of his great work, "The Physiological Anatomy and Physiology of Man," the fourth and last part of which was published in 1856. This work constituted an epoch in physiology, for it was the first physiological work in which the histology of the organs was given. It was written in a singularly lucid and interesting style, and its immense superiority in microscopical detail over any similar treatise published at that time may be appreciated by noting the accuracy of his descriptions of the structure of the various organs and tissues as displayed by his work with the microscope, but yet more complete evidence of their accuracy has been shown by their abiding reputation. The work is well illustrated, for the greater part by Bowman himself, whose hand was so steady and so sure that many of the drawings were mad

Phil. Trans. MDCCCXL. Plate XVIII. p 498



ILLUSTRATIONS MADE BY BOWMAN AND APPEARING IN HIS WORK "THE PHYSIOLOGICAL ANATOMY AND PHYSIOLOGY OF MAN."

Phil. Trans. MDCCCXL. Plate XVI. p. 495



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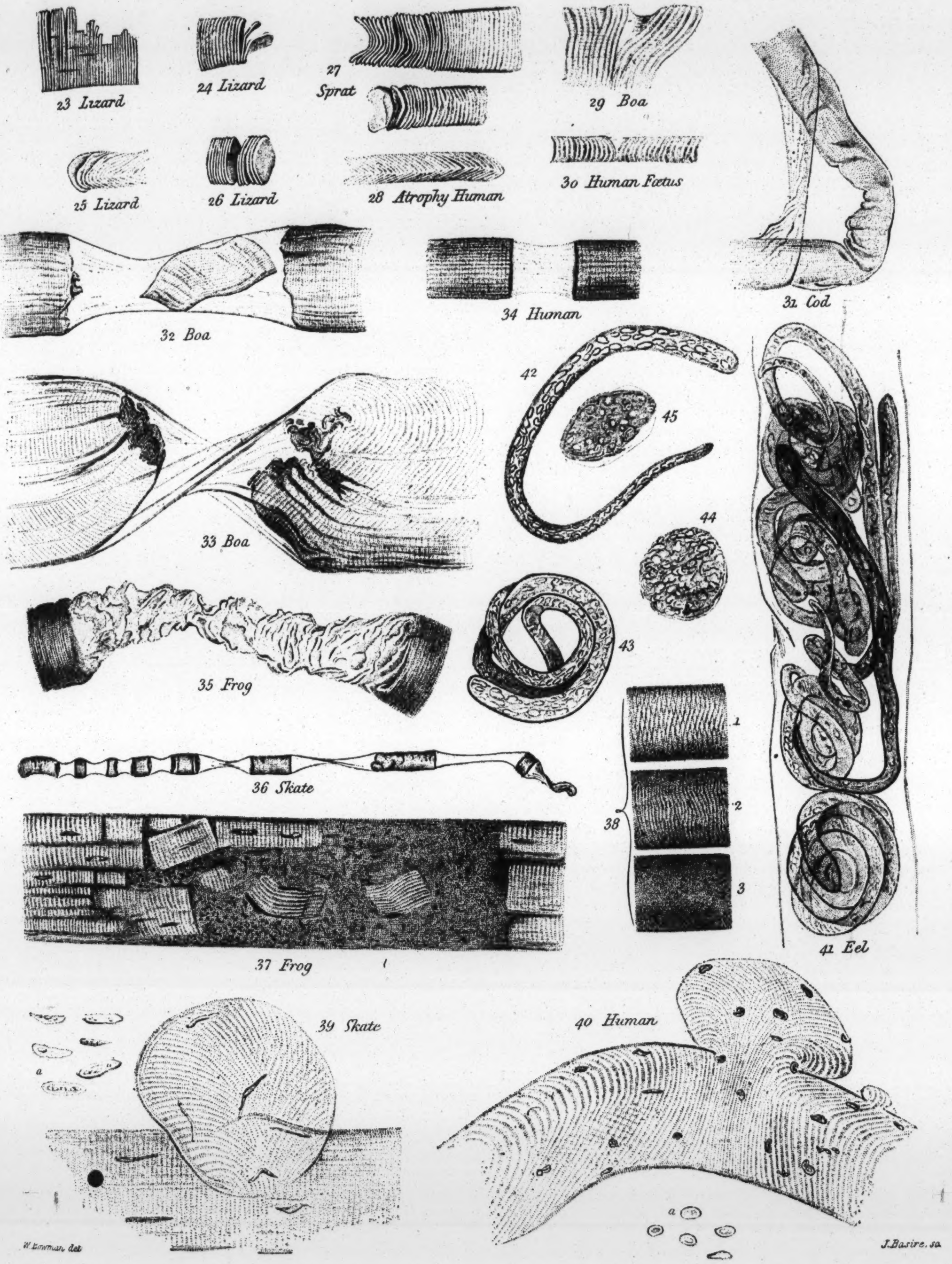

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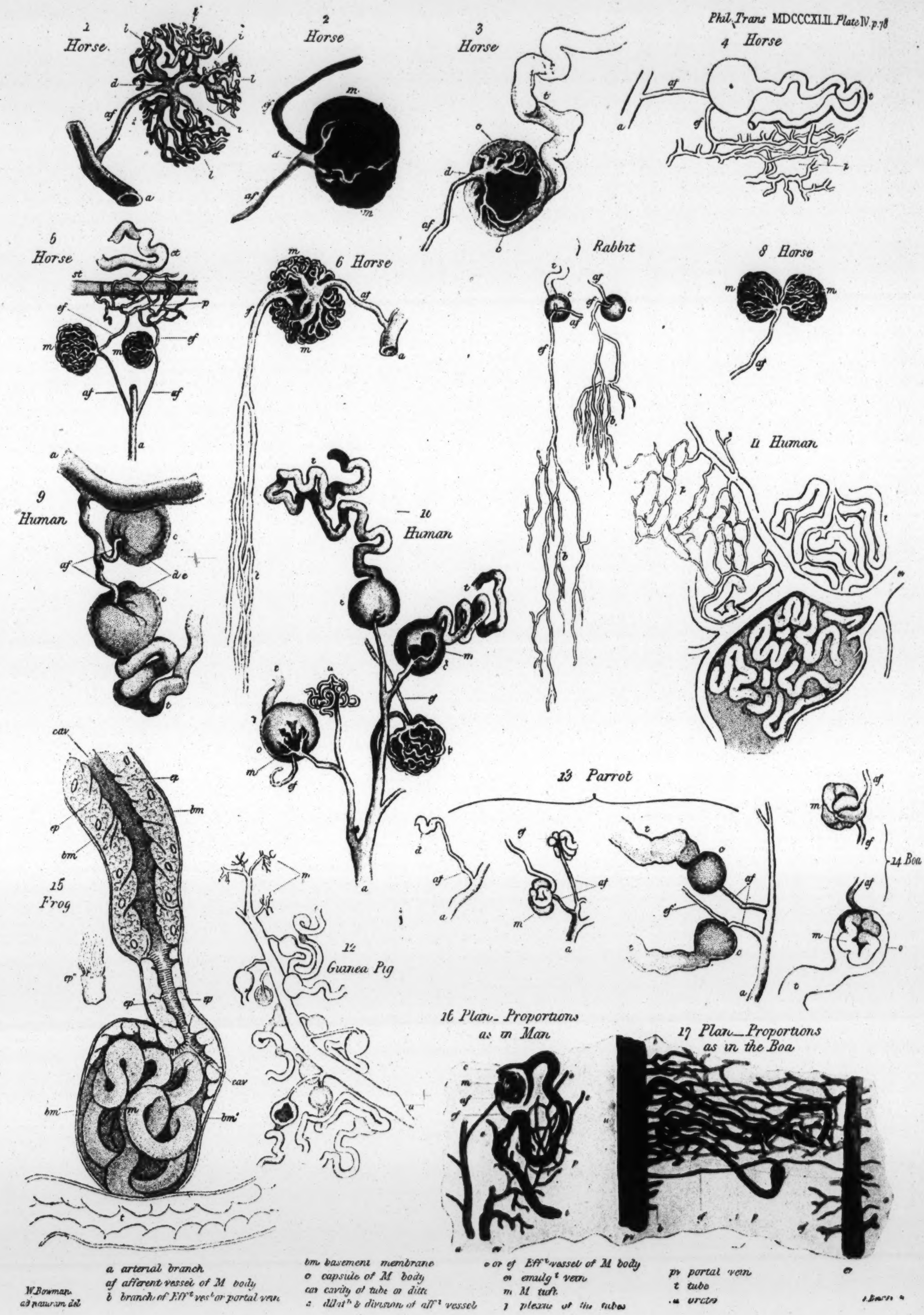


ILLUSTRATIONS MADE BY BOWMAN AND APPEARING IN HIS WORK "THE PHYSIOLOGICAL ANATOMY AND PHYSIOLOGY OF MAN."

directly on the wood blocks. No series of papers by one author, it may justly be believed, has been more important in the progress of histology and its influence on physiology than were these; the accounts are classical and although the deductions advanced by Bowman have been amplified by subsequent observers, the fact yet remains that it was Bowman who laid the foundations of our knowledge of the subjects he described, and no essential part of his observations have since been contradicted. In 1840 he wrote, for the "Encyclopaedia Metropolitana" the article, "Surgery," dealing chiefly with diseases and injuries of the bones and arteries, wounds, burns, hernia and diseases of the eye.

Bowman was already a leader in the medical world. His lectures and demonstrations in anatomy and physiology were well attended; his readiness to help by explanation and his power of expressing in words the thoughts in his mind were the features which marked his success as a teacher. He strongly recommended the cultivation of the habit of thinking, and carried into practice what he taught. The immediate effect of his histological work, as evidenced by the speedy appreciation of the value of his papers, was shown by his election in 1841 to fellowship in the Royal Society at the unusually early age of twenty-five, and in the following year, in recognition of his merit in the same line of research on the kidney, he was awarded the Royal Medal of the Royal Society. He later became Councilor and Vice-President of the Royal Society.

He strove to interest all in the use of the microscope. While studying histology himself, Bowman taught others what he had learned. Microscopy was then in its infancy; the means at hand for hardening, cutting and staining tissues were indeed limited. The microscopes of those days were clumsy instruments, and the English makes were complicated and expensive. Through his efforts microscopes were imported from France at a cost within the reach of the poorest student, and English opticians were enabled so to advance their own products that they equaled the foreign makes.

In the main Bowman's research was histological, but it was the kind of histology which is absolutely essential to the understanding of function. The brilliant results of his investigations into the structure of the eye, of the kidney and of the striped muscles, entitled him to be counted the "father of general anatomy" in England. The word "anatomy" at this time was applied not only to dissections but also to the whole use of the microscope in the study of the tissues in health and in disease. It can readily be seen that by this time Bowman had acquired a reputation of the highest order; nevertheless, at the zenith of his power he manifested a new departure.

The natural bent of Bowman's mind was towards pathology, operative surgery and clinical work. It is related of him that, when patients presented themselves at King's College Hospital and asked for the "oculist," he declined the appellation, saying he was a surgeon. It was for some time doubtful whether general or ophthalmic surgery would be his chief occupation but this was determined by events over which he had no control. His success in the treatment of the affections of the eye and the tide of ophthalmic practice becoming too strong to be resisted, he gave himself up to it and from then on, he concentrated his attention upon ophthalmology. In 1846 he was appointed Assistant Surgeon of the Royal London Ophthalmic Hospital, Moorfields, becoming

LONDON OPHTHALMIC HOSPITAL, IN BOWMAN'S TIME

Surgeon in 1851, which office he held until retired by reason of his age in 1876. At the time of his appointment, Mr. Dalrymple, who was the chief surgeon to the hospital, had the leading ophthalmic practice in London. Although still a young man his health was failing, and when he died, in 1851, Bowman succeeded him both in the hospital and in his chief private practice.

Soon after his first connection with Moorfields his "Lectures on the Parts Concerned in the Operations of the Eye, and on the Structure of the Retina," delivered at Moorfields in June, 1847, appeared, the first work to give a sound treatise on the microscopical anatomy of the eye. These lectures were not limited to the exposition of normal structures, they treated also of the changes induced by disease and injury.

To Hulke, Bowman's companion, an early and lifelong fellow student:

> It ever appeared that Sir William enjoyed very great advantages in having first practiced general surgery and in having served on the staff of a general hospital before his attention became concentrated upon ophthalmology; and it had seemed fortunate for him, that this translation was a natural result of the circumstances of his practice. . . . Another thing, which gave Bowman a very great advantage over some of his contemporaries, was a high scientific training in habits of close observation and reflection, acquired during years of patient toil in the dissecting room whilst a demonstrator of anatomy and in the prosecution of those microscopical researches which soon placed him amongst the foremost investigators of his time.

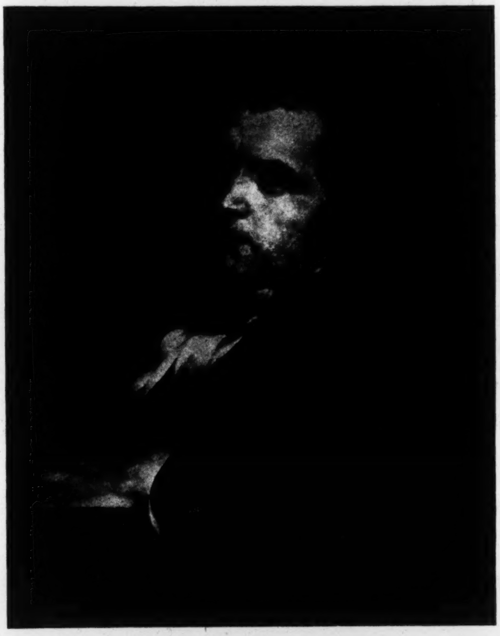
His first important communication on ophthalmological subjects was a paper read at the Oxford meeting of the British Association, in 1847, entitled "On Some Points in the Anatomy of the Eye, Chiefly with Reference to its Powers of Adjustment." In this paper he demonstrated the structure and functions of the ciliary muscle, and from it the scientific world learned of the minute structure of the retina, of the ciliary muscle and of the cornea, the elastic lamina, the familiar Bowman's membrane being included. This was succeeded by other valuable communications, among which might be mentioned "The Treatment of Lachrymal Obstructions," "The Division of the Canaliculus for the Relief of Epiphora," on "The Use of Two Needles at Once in Capsular Cataract" and "On Conical Cornea and its Treatment by Operation." These well-known papers were contributed to the now famous *Ophthalmic Hospital Reports.* Other contributions to the same reports were of great interest, as for example, "Needle Operations in Cases of Detached Retina" in 1865 and "The Removal of Cataract by Means of a Spoon," into which descriptions he put the same minute care which he bestowed on every step and detail in his performance of the operations.

In 1851 Donders and von Graefe, two men who rendered brilliant services to our art and lasting benefits to humanity, being in England on the occasion of the Great Exhibition, met each other and Bowman at Moorfields, for the first time, and together spent much time with Bowman, both at the hospital and at his own house. The ophthalmoscope had only recently been perfected by Helmholtz, and Bowman was one of the first to become expert in its use. The warm friendship which sprang up among these three men continued unbroken until the death of von Graefe in 1870, Donders following in 1889. Bowman's last published writing was his charming biography of Donders, to be found in the *Proceedings of the Royal Society*. A certain feeling of romance mingles with the thought of that meeting of the three great leaders and altogether remarkable men, at the moment when a new and fascinating field for scientific work had been opened to them. What thoughts one has in contemplating them in their earnest study of the new and of the known, and of the to-be-discovered mysteries of their chosen field of labor! Can we not picture the animated discussions and the comparing of experiences that they had? There are no more inspiring pages in the history of ophthalmology than those in which Donders tells of the achievements of von Graefe and Helmholtz and that last publication by Bowman, in which he does honor to the memory of Donders!

From that time forward, extending over a period of more than thirty years, Bowman's professional life was one of extreme activity and brilliant success. His reputation and practice rapidly increased, and though, through want of leisure, elaborate histological research was no longer possible for him, papers of great practical value still came from his pen. The epoch-making papers on the treatment of glaucoma by iridectomy communicated by Albrehct von Graefe to the Congress on Ophthalmology at Brussels in 1857, struck a chord which found a response in the mind of every surgeon occupied with the treatment of eye disease, and probably in no one did it awaken a livelier and deeper interest than in Bowman. He tried the method with his customary earnestness and found it so effective that he immediately and strongly advocated it and, at Moorfields, his trial of the operation extended as long as he continued on the staff. He translated one of von Graefe's articles for publication in the *Ophthalmic Hospital Reports,* to which he added notes from his own experience. Besides this great service he himself published a number of papers concerning the operation and the benefits to be derived from its performance. All that he wrote was based on deliberate and thorough observation and was expressed in simple and explicit language, without a trace of exaggeration or display.

In 1867, the degree of M.D. was conferred upon him by the University of Dublin.

In 1876, having reached the age of sixty years, the time came for him to resign the surgeoncy of the Ophthalmic Hospital. Much was done to make it possible for him to continue work at Moorfields, but he deemed it wise to retire from further service there. He retained his preeminence in private practice, however, for a number of years longer. He then began to withdraw from active affairs and to spend an increasing portion of his time at Joldwynds, eight miles from Dorking, where he had a country house and gardens, which he loved to cultivate, in the beautiful Surrey Hills, 550 feet up overlooking the Weald of Sussex. He removed from Hampstead in 1870, and enjoyed the prosperity which he had attained after great difficulties in his early professional life, and with it he had complete domestic happiness. "He spent his time in laying out the fourteen acres of beautiful gardens which surround the house which was built from designs by Webb in conjunction with William Morris, between 1870 and 1873." All his honors and this sweet peace were all the more deserved, for, at the commencement of his professional career, he was a quite poor man. His father, so it would seem, was carried away by his interest in natural science and later failed in business.



WILLIAM BOWMAN, *Aet.* 48
(After the Painting by Watts)

When the Ophthalmological Society of the United Kingdom was founded in 1880, Bowman took the warmest interest in its success; he might be termed, indeed, the chief founder. He had already conferred inestimable benefits on ophthalmologic science, and it was natural that he should be invited to become the first president. His acceptance of the office at once secured the success of the infant Society, and gave to it from the beginning something of Bowman's own dignity and high position. He was an ideal president, speaking little, but always with purpose and effect, showing interest in every communication, and encouraging every effort at good work. He retained the office for three years, guiding its discussions with that combined wisdom and simplicity which those who knew him were not likely to forget. He was delighted to see the younger generation devoting themselves to the earnest study of the diseases of the eye, and by exciting mutual interest and by the exhibition and recording of cases that would otherwise have been lost, developing and rendering more accurate and successful their diagnosis and treatment.

Bowman thus exercised great influence in the increase and diffusion of the knowledge of safe ophthalmic surgery and scarcely less than the influence of his writings was that which was due to his speedy adoption of the right opinions and practices of others, especially in the use of the ophthalmoscope, the antiseptic treatment of wounds, and the promotion of von Graefe's pathology and treatment of glaucoma, as well as Donders' discoveries relating to errors of refraction and their remedies. He protested forcibly against the views of the antivivisectionists, "he practically charged them with stopping the gates of knowledge, neither going in themselves nor suffering those that were entering to go in."

In 1880, when the British Medical Association held its annual meeting at Cambridge, Bowman was President of the Ophthalmological Section. Donders also was present, and the senate of the University conferred its honorary degree of LL.D. on each. In the following year Bowman presided over a still more important gathering in London, the Ophthalmological Section of the Seventh International Medical Congress. The fine nature of the man, his high ideals, simplicity and modesty, are perhaps no more clearly shown than in the inaugural address given by him on that occasion.

He continued to occupy an almost paternal position in relation to the Ophthalmological Society and, until the day of his death, he took the warmest interest in its affairs. Jonathan Hutchinson relates that the Society was for a time in a position of great difficulty and it seemed certain that it could not have afforded to continue in its place of meeting with its ambition to collect a library, form a museum of instruments and appliances and develop itself in the proposed directions, had it not been helped by an act of scientific beneficence not often surpassed. Bowman, having acquainted himself with the facts and noting their position, made an offer to the council to undertake himself the cost of purchase of all fittings necessary for the museum and library, and further, to make a gift to the Society, annually for twenty years, of the sum of £50 in order to defray the expenses of rent of rooms.

In the meantime, Sir Jonathan further relates, the Society had had under consideration a proposal to recognize Bowman's preeminent position in respect to ophthalmology. On the suggestion of Dr. Gowers it was decided to found a lectureship to be known as the "Bowman Lecture." It was proposed that a lecturer should be appointed each year and invited to prepare a critical summary of the best extant information upon some subject to be selected by the council or, if not selected, approved by it, the Lecture to be delivered at a meeting specially appointed for that purpose, the endeavor being to contribute each year something real towards that "advancement of knowledge for the good of man's estate," which had been Dr. Bowman's lifelong aim.

In 1884, Dr. Bowman was created a baronet in recognition of his scientific attainments and professional eminence. Not until he was seventy years of age did Sir William Bowman relinquish active practice, and even for some years longer he was still accessible to those who specially desired his opinion and advice during his visits to London one or two days a week. Thus he attained old age without apparent diminution of mental power or the love of acquiring knowledge and, to the last, his studies of science and art gave him great happiness.

His retirement led the profession, in 1888, to acknowledge the appreciation in which he was held on account of his high character and professional and scientific attainments. The testimonial took the form of a portrait and the reprinting of his publications. The portrait, referred to early in this account, was exhibited by Mr. Ouless at the Royal Academy in 1889. The testimonial was subscribed to by 446 persons, including distinguished representatives of medical, physiological, and especially ophthalmological science, throughout the civilized world.

The reprints, the proof sheets of which Sir William revised by his own hand and annotated, are contained in two royal volumes; the first comprises the "Researches in Physiological Anatomy," and the second, "Miscellaneous, Surgical and Ophthalmological Papers." Each volume is preceded by a portrait; the first, that after Watts, shows Bowman in his animated earlier years, and the second, the well known three-quarter length in a sitting posture, sedate, and reposeful, is expressive of his appearance to those who knew him in his later years.

In 1842, he married Miss Harriet Paget, fifth daughter of Thomas Paget, a highly esteemed surgeon of Leicester. They had seven children. In their home life they lived very much as he had lived in his early years, imitating his parents in his scientific and artistic studies. He and Lady Bowman "were continually surrounded by his children; and, later on by his grandchildren who visited him in turn." He was of a deeply religious nature which he expressed by his quiet piety and never failing acts of charity. In his early manhood, before his marriage, he was baptized and continued a devout and humble member of the Church of England. He read deeply works on constructive theology, so that he was as able to give the reasons of his religious faith as he was to define his physiological beliefs. He could "recite from memory most of the Psalms and nearly all the writings of St. John."

On Tuesday morning, March 29, 1892, a little less than a week after Sir William's final retirement from practice, he died of pneumonia. He had caught a chill while moving his books and manuscripts to Joldwynds from the house on Clifford Street which he had occupied since 1850. Here Liston had lived and died. He was buried on Friday, April first, in the neighboring churchyard of Holmbury, St. Mary, a memorial service being held at noon of the same day at St. James', Piccadilly.

His personal estate was valued at £103,948. The Joldwynds estate was left to his eldest son, Sir William Paget Bowman, subject to the use of Lady Bowman, who survived Sir William until October 25, 1910. The portrait by Mr. Watts was bequeathed to the collection given by the latter to the National Gallery.

Dr. Bowman "was wonderfully kind to all his patients and treated many in poor circumstances gratis." He took a wide interest in his hospital patients, and none was more carefully considerate of their welfare. In cooperation with others he established St. John's House and Sisterhood, an institution which provided trained nurses for the sick poor and which was the first to set on foot the present system of hospital and private nursing. Later he was able to aid Miss Nightingale by sending out trained nurses to the East at the time of the Crimean War. He was a member of the council of the Nightingale Fund until his death.

Bowman, as has already been said, became the leading ophthalmic surgeon in London and of Europe, a position he maintained for many years and in the rapid advance of ocular surgery which the last half of the nineteenth century witnessed, he, in England, played a most important rôle. His practical gifts were as great and as fruitful as his scientific attainments. As an ophthalmic surgeon he occupied a unique position, unrivaled in his knowledge of the ocular structures, his experience and in his operative skill. In the judgment of his contemporaries and students few men equaled, fewer still exceeded, Bowman's manipulative dexterity with his thin, delicate and artistic fingers, absolutely destitute of nervous tremor. He had many habits and mental qualities favorable to the attainment of success. He was punctual and business-like. For a considerable time he commanded an income that was equal to, if it did not surpass, that of any of his compeers. Without being an ascetic, he was abstemious in his habits, eating little and drinking less. He was an early riser and a non-smoker. Though of slender build and pallid complexion, with delicately cut features, he was able to endure much work and was equal to the strain of a busy life in the metropolis, rarely suffering from any disturbance of health with the exception of an occasional headache, and, in later years, slight attacks of sciatica.

The quantity of work that he did was indeed remarkable, yet he limited himself almost exclusively to study and the plain duties of life. "He retained these great powers of work and of concentration till his death." Throughout his life he was an observer and an oral teacher. He worked for facts, and for the best use of facts in his practice, in the extension of science. He was a ready writer; he never wrote for publication till he was sure of his facts. What he wrote, therefore, has had a permanent value. It was said of him by one who knew him well, that one of his most striking characteristics was the power he possessed of concentrating his thoughts for the time on the one subject he was investigating. When conical cornea and detachment of the retina engaged his attention, he thought of nothing else, and so with iridectomy and tension of the eye. He never had more than one subject in his mind at one time, but he worked that one thoroughly out, and so with his patients. A gentleman who had consulted many for the relief of glaucoma, said that his touch was the "lightest and yet the most inquiring" of all those under whose care he had placed himself.

In the summer he worked in his garden, first at Hampstead and later at Joldwynds, in the early hours and arrived in town at about nine, attended hospitals, King's College or Moorfields, and then was engaged with patients till late in the afternoon. He set aside the time for council, or other meetings, of the many societies of which he was a member and councilor, returning to the quiet enjoyment of his tranquil home, surrounded by a few choice books and works of art and a family devoted to his happiness. In winter, living more in town, he attended the meetings of the Royal Society and the Royal Institution, organizing lectures and taking a deep interest in the promotion of its objects. He was instrumental in founding, indeed, he might be regarded as the founder of the Association for Advancement of Medicine by Research. Although he gave up his professorship of physiology and his active work in the field of research he still continued to stimulate others and encouraged the younger school of physiologists in their endeavors. His striking and impressive figure was regularly seen at the meetings of the Physiological Society. In these fields of interest he did all that could be deemed his duty, and he did it quietly, wisely, and without self-assertion; just as he did many generous things in charity and the promotion of religion.

He was held in the highest esteem by his professional brethren. In consultation he was gentle, patient, and thoughtful, alive to and quickly seizing the salient points of every case, yet he was very reserved, giving his opinion in few words but decisively, both as to forecast and treatment, gaining the confidence of all. He was ever loyal to the colleague associated with him in the case.

From the beginning to the end of his life he held his profession in high regard, and believed that to excel in it was worthy of enduring effort. Throughout the brightest period which ophthalmology had known, it was by oral teaching and demonstration that Bowman made the greatest impression upon his professional brethren. Surgeons from far and near were constantly to be seen around his desk or in the theater eagerly listening to the few lucid words in which he discussed his cases, or watching with delight the supreme skill of his operating. There was a dignity about him, a calmness of speech and movement suggesting power in reserve, and a charm in his refined face which were irresistable. Priestley Smith, looking back on the days he spent at Moorfields, recalls Bowman as he appeared there, the quiet, keen observer, the thoughtful teacher, the perfect orator, a leader amongst those, all well remembered, who were leaders of those days.

Sir James Paget's sympathetic estimate of his life and character is well worth quoting as it was based on a knowledge of the man for fully fifty years.

> A notable characteristic of Sir William Bowman's mind was his accuracy in observing and recording facts, and his habit of pursuing investigation to the furthest point attainable. This was shown alike in his practice and in the studies of his early life, and admirable examples of it are in the papers on the "Structure, and Movements of Voluntary Muscles," and on the "Structure and Use of the Malpighian Bodies of the Kidney" which were communicated to the Royal Society in 1840, '41, '42. It may fairly be said that in his studies of these subjects is discerned and exactly described all that at that time was within the range of possible observation. The award of the Royal Medal of the Society in 1842 justified the reputation which he had already gained among the anatomical teachers of that time, and greatly increased his influence in his own and other schools. His method of scientific work was not materially changed when he may have seemed to have narrowed his field of study by limiting his practice to ophthalmic surgery, for his practice and all his writings showed not only that he applied a wide range of general knowledge in the study of his special subject, but that he made his special knowledge applicable in illustration of general principles. His writings on ophthalmic subjects may be called monographs, but they may teach a large part of all surgery; and there is no guesswork in them; they show, as did his whole life, that he was eminently an observant man of science, and even his favourite recreations showed the same, his plant culture and his constant observations of Nature. To those who knew him well it was often a subject of regret that Bowman's health, though never seriously disturbed, was never vigorous enough to justify him taking an active part in the public or official work of his profession. If it had been possible for him to give time to work of this kind, few if any could have done more good, for he was always wise in counsel, calm, liberal, and a lover of peace. He maintained a very high stand of professional conduct, and never swerved from what he knew to be right, but he never sought self-advancement, and never seemed to wish to dominate. His influence would have been great and all good.

Gowers referred to him as:

> The very ideal of refined mental power, combined with quiet earnestness and with the courtesy that is born of perfect kindness, all expressed in a face and by a manner which once seen no memory could lose . . . No one was ever more ready than he to see the effort where performance failed, to commend the trifling good, and to ignore that which, far more obtrusive, might reasonably warrant censure, a censure which, for merely intellectual failure, never, I think, came from him.

Hansen Grut, of Copenhagen, in 1880, deemed it fortunate that the members of the Ophthalmological Society had still among them the man who had always stood as the great example to the practitioner of ophthalmology. Every foreigner, he said, who had had, like himself, the privilege of seeing Sir William at work, fully understood and heartily shared the unparalleled love and admiration which was bestowed on him by his countrymen. And he prayed that Sir William might long enjoy the result of his blessed and honored career, and that he might for many years more serve as the glorious illustration of what the great men of the grand period of ophthalmology were like.

Leber, of Göttingen, when asked to deliver the Bowman Lecture, accepted the invitation, as it gave him the opportunity to express the veneration which he "with the whole scientific world, and not the least the men of science of his own country, felt for Sir William, the memory of whose work will long survive him in the records of that science which he had so greatly advanced; and the remembrance of his venerated person would remain forever in their hearts."

To Snellen of Utrecht the opportunity to deliver the Lecture:

> Revived in him the grateful remembrance of Bowman's personal acquaintance and of the kindness and friendship with which Sir William always favored him. Thanks to Donders' introduction, forty years previously, he had had the privilege of being his guest at his pleasant and hospitable home at Hampstead. Many times later he had ample opportunities to admire his unparalleled skillfulness as the brilliant operator, the scientific physician and the courteous lecturer. His acquaintance with Bowman was always a source of gratitude to him, and every work of his remained in his memory and made him cherish and revere the vivid recollections of his imposing and inspiring personality.

To the mind of Fuchs of Vienna:

> Bowman commanded many different fields of medical science; but, owing to the increased amount of our knowledge, it is not possible for any one man to cover so much today. Bowman's name is forever connected with the development of anatomy, physiology and ophthalmology, and, as far as the eye is concerned, "Bowman's membrane," and "Bowman's tubes," will perpetuate for all time his name in the memory of the student of medicine.

NOTE: The material for this memoir was drawn from: (1) The Memorial Volumes; (2) *The Transactions of the Ophthalmological Society of the United Kingdom;* (3) Priestley Smith's biographical notice, *Ophthalmic Review*, 1892, Vol. XI; (4) *Med-Ch. tr.*, 1892, lxxci, 10; (5) *The British Medical Journal*, 1892, I, 742; (6) Personal letters from Mr. Priestley Smith, and to his kindness I owe the illustrations showing the old Birmingham Hospital, King's College Hospital and "Moorfields;" (7) Personal letters from the Rev'd Sir Paget Bowman; (8) The views of Nantwich were taken from Rimmer's Ancient Streets and Homesteads of England.

NOTES ON THE SURGICAL CLINIC OF CHARLES UNIVERSITY, PRAGUE, BOHEMIA, ONE HUNDRED YEARS AGO*

(A TRANSLATION)

By HENRY J. JOHN, M.D.

CLEVELAND, OHIO

SOME very interesting observations on the teaching and practice of medicine and surgery in the early part of the nineteenth century can be found in the "Diarium of the surgical clinic from November 7, 1826, to August 21, 1827," of Dr. Jan Eiselt written while he was a student at Prague. Surgical science was just beginning to take the place of barber surgery, which was considered beneath the dignity of a physician. Asepsis and any type of narcosis were unknown and it is not strange therefore that septic phenomena were considered necessary phases of the healing process and that much influence was attributed to superterrestrial powers. Since any other explanation of these various mysterious phenomena was lacking, medical science was bound up with religion and philosophy. The greatest surgical feats of the day were lithotomy and operation for incarcerated hernia.

At the time Dr. Jan Eiselt was a student in Prague, the professor of practical surgery in the city's general hospital was Dr. Fritz. He held a clinic daily at 10 o'clock followed by a lecture until twelve; the afternoon ward walks were from six to seven o'clock. From the scattered notes throughout the diary we get the following description of Professor Fritz:

He did not come from an educated family, his father being a cowherder, and in his eighth year had not learned his alphabet. For three years he attended the junior class, since on account of the war with the Turks the gymnasium had been changed into a hospital. He then became a cook and spent his Saturdays baking cakes. Later he studied to be a barber surgeon and in three years he graduated as a county surgeon in Kransko. Here Fritz also studied in the library of a certain lawyer who had retired and was on a pension. Later he went to Lublan to Professor Kern who after examining him on his knowledge of stone in the bladder encouraged and helped him in further study. He studied grammar, syntax, rhetoric, poetry and surgery for four years *cum singulare eminentia.* He used to say that when he was a student he had only one hat, one coat, one cane and one God, and that since Frederick, the great king of Prussia, had only ten shirts when he died, a student needed but one. He was not above shining the muddy boots of

JAN EISELT, M.D.
(1805–1865)

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*Taken from diary of a student, Dr. Jan Eiselt by his grandson Dr. Rudolph Eiselt.

his professors. Later he studied in Vienna for seven years, again with Professor Kern, who "brought surgery to its natural life, for before him it had been simply a quasi-science composed of charlatanism," and for three years was an assistant there. Joseph's Academy in the years from 1785 to 1804 allowed barber surgeons to become doctors in only one year and ten months, but of his own accord Fritz remained for four years. After obtaining his degree he continued to study anatomy in Vienna for four years longer so that he was thirty years old before he began his active practice as a doctor. For three years he was a professor in Vienna where sixteen years before the first lithotomy had been performed. In 1809 he went to Prague where he was a professor for seventeen years. Here he started the medical library and the medical surgical journal. In Prague he performed the first herniotomy and lithotomy operations, his predecessor, Nusshard, never having seen a lithotomy, an operation for aneurysm or for rupture, since Nusshard and Krombholz had decided in 1808 to cut the band of the rupture ring and leave the rest to nature.

Professor Fritz often expressed his religious views in his lectures, in one of which he said: "Thus far I have not written anything, teaching merely by the spoken word as Jesus did. I can swear to no teaching, I have no system, I am an eclectic."

The words of Professor Fritz in his opening lecture as given in the following excerpt, differ little from those of similar lectures of today:

> On the opening day, November 7, 1826, Fritz, standing before his class, dressed in a green coat, black vest and trousers, a high red cap with a wide gold band, and with lace on the front of his shirt, began to lecture as follows: "The practical school in which you now are is very different from the theoretical school from which you have come. There you simply heard the words of your teacher; here you will, for the most part, observe for yourselves by going from bed to bed and observing nature. There your work was merely a test of memory; here you will have to think for yourselves and apply that which you have already learned. There is a great difference between acquiring knowledge and applying that knowledge to practical use. Each one of you should keep a day book in which to record all your observations of the sick and my explanations which, although they may seem insignificant to you, will remind you of my teaching in the years to come. Would that I could recall all that I learned while in college! As to how you are to deport yourselves, those rules you will find written on the blackboard beside the door."
>
> In another lecture Fritz reminded his students that they were to walk quietly in the wards and that they were not to gather there unnecessarily for discussion. Such discussions were to take place in the amphitheater.
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> There are three classes of students here, the patrons, the masters and the doctors, and these distinctions everyone must honor. Each must have respect for the one who is above him and at the same time each must defend his own rights and those of others. In such a mixed group, the position of a teacher is very difficult. I cannot speak as I would were only the doctors here. As it is I can go into few explanations and at times the surgeons will simply have to take what I say for granted. A doctor is above a surgeon because of his greater amount of study, although in the practice of surgery he may at first be a bit awkward. According to the law, the surgeons should have four years in the common school, but they go but three. Then they go to the doctor's office to get their certificate and then enter the university. A doctor goes to common school for three years, then for six years he prepares himself for his philosophical studies which continue for three years longer and only then does he enter the university. Therefore the surgeons must show respect to the doctors when they are allowed to attend the same school, for this fact alone does not mean that they are equals. Youth has a great conceit and no power on earth can hold it within proper bounds as we saw clearly during the Napoleonic wars in France. Ever since the surgeons have been allowed to attend the medical clinics, their conceit has been unbearable

and it is only to the greater learning of the doctors that the surgeons owe their standing. Otherwise surgeons would still be in danger of the hangmen as in the days of King Matthias Corvinus who carried the point of a lance in his arm for three years because no surgeon in all Austria, Bohemia, Hungary, Germany, or even behind the Alps dared to take it out. The surgeon belongs to the third class of government officials and this is of the same rank as the stenographer. With the doctors it is another story; since they belong to a higher social stratum they are entitled to greater respect.

In the country the surgeon because of his greater popularity forces the medical man out, but in the city the surgeon is repressed by police laws when he attempts to write a prescription for anything to be taken internally. A surgeon must do what the doctor commands. If a rectal examination is necessary a doctor can simply command a surgeon to make it. One doctor commanded a surgeon to open an abscess, after which gangrene set in and the patient died. Lorenz Heister (1704–6) was the first German who as a doctor lowered himself to the practice of surgery; he is to the surgeon what Hippocrates is to the medical man. His works on major and minor surgery have been translated into French. To the beginning surgeon I recommend Knigge's book "How to deal with people" and Salzmann's "Heaven on earth."

The surgical clinic had two wards, one for men and one for women, with a total of thirty beds. Students on duty served daily in the clinics. Fines were levied on both students and nurses for sleeping during inspection, the nurses paying fifteen kreutzers. Once a surgeon paid twenty kreutzers (about ten cents) because he was not awaiting the professor at the bedside to which he had been assigned to help at the changing of the dressing; another was fined because he did not write on the blackboard the length of time of the patient's illness.

Fritz used to forbid his students to help each other at his frequent examinations in which he delighted in asking "reasoning questions." Often he called the roll to see if all were present, threatening to exact fines in money if attendance was not regular. He gave his students advice as to how to handle both rich and poor patients in general practice and told them that it was well to attend church "for there you will at least have quiet and will get a bit of fresh air." He started a medico-surgical society for his students in which the members paid a regular fee although those too poor to pay were allowed to attend without charge. Once after reprimanding a student who had talked back to him so that a scene had ensued, Fritz was called before the gubernatorial council, and the director of the school and himself were reprimanded because in his lectures he extemporized too much, often even talking on religious subjects.

Fritz' lectures were interspersed with excerpts from the history of surgery, practical hints and at times lax stories. One of his anecdotes was that seventy years before, someone had complained to the bishop regarding Karl Siebold of Würzburg, who operated a great deal, saying that there were more one-legged people in Würzburg than in any other city. The bishop replied that this was undoubtedly true because one-legged people still walked while in other cities such people died and were buried with both legs instead.

Since bougies which were used for urethral strictures were very expensive, Fritz used to tell his students to make their own. He himself once bought in Lublan all the strings for a harp which he used according to their size. He said in France, where there were many cases of urethral catarrh, injections were used in place of bougies but these only aggravated the disease. Fritz was wont to show the scars on his arms which were the result of his strenuous use of hot applications for his gout. Fritz never drank beer or wine and he was strongly opposed to coffee. (In those days there were no coffee houses in Prague and coffee was considered a great luxury.)

Fritz' descriptions of some of the operations which were performed without any narcosis and antisepsis were very touching. One boy who was bound hand and foot and operated upon for lithiasis of the bladder, the operation lasting for three-quarters of an hour, during which time he lost much blood, was so brave that Fritz had his own son brought in that he might see how well the boy behaved. Fritz then showed his son those sick with chancres and paraphimosis in order to warn him against masturbation. At operations for incarcerated hernias the patients usually cried out at the first cut and again at the cut into the fibrous ring. Such operations were performed even at night. The diagnosis of hydrocele was strikingly frequent even in small boys, as was that of caries, luetic ulcers and necrosis of the bone. Insignificant warts in old people unless taken out were often found to develop into wide spreading cancers.

Although Fritz thought it strange that so many new diseases developed after the introduction of vaccination, he still continued its use. Against gonorrhea Fritz recommended the preventive use of potassium hydroxide. How often strictures resulted therefrom is not known.

The Catholic priests submitted to operations less readily than anyone else, especially those who were poor, even though, as Fritz comments, as they have no passion they supposedly do not cling to life.

General directions for operations were given as follows:

> Before the operation we must win the confidence of the patient and convince him that sharp knives do not cause more pain because they are sharp. Some patients must be prepared for their operations for some time beforehand, but not as the staff physician Waering did when he took four stalwart grenadiers and for six months prepared them for lithotomies by tea and stories daily. All four died following the operation which was performed by a good method. Prof. Kern did not prepare his patients; he simply took out the stone and of his thirty-five patients not one died.
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> You will lose all confidence if you do not preserve cleanliness about the sickroom. You must see to it that the stove heats properly and that there is plenty of bed-linen, etc. The instruments you should arrange in the order in which they will be used, after which they should be wrapped up in cloth. A large sponge will be needed and this you will put into your pocket. You will write down the method according to which you wish to operate. Then three or four dependable helpers will come into the room, casually, one by one. No aprons should be worn lest you look like butchers. You will need waxed linen, water and better still, ice.
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> If possible the sick man is operated on in a sitting posture, even though in this position he faints more easily; sometimes the patient may lie down, but this is not advisable if it can be avoided as the bed gets bloody. While operating you should amuse the patient. You must not become angry if he cries out but try to turn his attention elsewhere. A cut should not be repeated unless necessary and it should be long and quick for the pain is chiefly in the skin and muscles. You must try to cut during moments when the patient does not thrash about but you must not stop to let him get his breath. Oken advises covering the knife blade with oil but this applies only to the primary cut. Pressure on the nerves is often destructive.
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> After the operation the first thing to do is to stop the bleeding. Then a simple dressing is applied, a dry piece of gauze which can be soaked in oil if you do not fear a secondary hemorrhage. My teacher, Kern, first introduced the simple dressing, which is practically no dressing, which at that time created a great sensation. After the operation stay with the patient for a little while in order to make sure that no bleeding will take place; some tinctura thebaica may be used. It is best to give him a milk diet only. You can predict to the patient that on the third day, he will in the evening have a high fever, his pulse will become quicker and he will have a restless night. The impurities must be gotten out. After major operations a high fever follows with varying degrees of danger—the longer the fever the more danger.

Fritz preferred an interrupted stitch tied to the continuous stitch and between the stitches small bandages over which charpie and sticks soaked in oil were placed. Larrey objected to these claiming that they aided suppuration. Fritz did not perform acupunctures but he lectured about them and about the use of electricity with them which had been tried and was said to work well.

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BIOGRAPHICAL NOTES

Dr. Jan Eiselt was born in Prague in 1805. He completed his medical studies in 1834 and the following year received the title of master of obstetrics. At first he served as government physician in the town of Policka. Four years later he became the sectional chief of public health in Tabor. In 1843 he received a similar appointment in Jicin, and in 1855 one in Kralove Hradec. He was very active in scientific work, especially in entomology, and he published many articles in Latin, German and Bohemian. He became an honorary citizen of Policka and of Kralove Hradec where he died in 1865.

Dr. Bohumil Eiselt, son of Dr. Jan Eiselt, was a professor of medicine at the Prague Medical School and as a friend of Purkyne, helped to lay the foundation of modern Czech medicine. His chief interests lay in pathology and internal medicine. In 1862 he started the Czech Academy of Medicine and the Czech medical journal, *Casopis lekaru ceskych*. In 1878 he published his monumental work, "Special Pathology and Therapy" in six volumes. He was a friend of students and founded a fellowship for the aid of those needing financial help.

Dr. Rudolph Eiselt, the author of this article, is the son of Dr. Bohumil Eiselt and grandson of Dr. Jan Eiselt. He is professor of internal medicine at the Czech University Medical School at Prague and is particularly interested in chemistry, metabolism and tuberculosis.

CARL WEIGERT*

By HYMAN MORRISON, M.D.

BOSTON, MASS.

CARL WEIGERT was one of the great pathfinders in medicine. When still in his twenties, between 1871 and 1875, he made a study of smallpox which is a milestone in medical history. It marks the beginning of bacterial and differential tissue staining and of the examination of pathological tissue in serial sections. Furthermore, in his study of the skin lesion in smallpox, Weigert was first to describe coagulation necrosis; this led him to conceive primary tissue injury as the specific reaction on the part of the organism to external irritation, determining, according to the location and the nature of the injury, the secondary, active, proliferative phenomena of inflammation. He took issue here with no less a person than Virchow but it became the driving force of his life and stimulated a memorable series of investigations, touching nearly the entire domain of pathology. His work extended vastly beyond the bounds of knowledge of disease and carried him to a lofty conception of the organic world closely akin to that of Spinoza. Incidentally he created methods of bacteriological and histological technique which influenced profoundly the progress of medical science.

Weigert's true rank in medicine is not generally recognized. Because he was a Jew he did not receive academic standing in Germany and he spent the best part of his active life in a small laboratory in Frankfurt-am-Main without any university connection. Moreover, though he worked indefatigably for thirty-four years, till the end of his life, he published relatively little. "Don't be too much in a hurry to publish" was his advice to assistants and pupils, and he himself certainly followed this dictum. His scientific effort was directed toward reaching the bottom of things, and helped to lay the foundations of several of the medical sciences. It was fundamental work, but not as visible as the superstructure. In English medical literature there is little to be found about the man or his work, except for several necrologies in 1904, and the short paragraph in Garrison's "History of Medicine." In 1906, two years after Weigert's death, Robert Rieder, a former pupil, published his collected writings in two volumes, under the title of "Gesammelte Abhandlungen." Ninety-seven papers are included, one being an unfinished manuscript upon which Weigert was busily at work at the time of his death. The editor gives a splendid summary of the master's work, and speaks feelingly of his great worth. There are included, also, two short appreciative essays by Ludwig Edinger and Paul Ehrlich. In 1907 the *Journal of the American Medical Association* contained a review of these volumes, with biographical memoranda, by Dunham and Herter.

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* Read before the Boston Medical History Club, November 19, 1923.

His Early Life and Work

The story of Weigert's life may be stated briefly. He led an unusually simple life, self-denying, almost ascetic, resembling Spinoza in many ways. It is noteworthy that Paul Ehrlich was his cousin, the latter's mother being a Weigert. Certainly this Jewish family contributed its share to the world's progress. Weigert was the older of the two by nine years, and not the least of his benefactions to mankind was the great influence he had over his cousin. They were both natives of Silesia, Germany. Carl Weigert was born in 1849 in the small town of Münsterberg, where his parents kept an inn. His devotion to his parents was exceptional. During his student days they were able to keep him in relative ease, but later in life they met with financial reverses, and Weigert unbegrudgingly turned over to them the greater part of his meagre income. In speaking of this, Lichtheim, an old friend, says: "When visiting him in Leipzig I used to see what a sacrifice it was to him to aid his parents. He actually had nothing but bread for supper, but I never heard a word of complaint, and I doubt if any of the families with whom he associated ever suspected his financial difficulties."

Weigert studied medicine in Breslau and Berlin, where he came under the influence of such men as Fredinand Cohn, Heidenhain, Traube, Virchow and Waldeyer. He was a good student but was not anxious to excel, a trait seen in him throughout his life. He was particularly attracted by Waldeyer who instilled in him a love for research in morphology, and in 1868, after receiving his degree, he became the latter's assistant at Breslau. This work was interrupted by the Franco-Prussian War, during which he served as regimental surgeon. On his return to Breslau he became assistant in the University Medical Clinic under Lebert. Though ward work was drudgery to him, the training there gave him a viewpoint which later in life helped him to correlate pathological and clinical findings in his demonstrations at the autopsy table. Both Ehrlich and Lichtheim speak of those early days at Breslau. He shared his room at the All Saints' Hospital with the latter and a third friend, Senftleben. The three worked at a large table which nearly filled the room, and there young Weigert spent every free moment over the microscope.

A severe smallpox epidemic in that city in 1871 and 1872 gave him the opportunity to do his first great work. And he did it alone in his little room, without any guidance or encouragement, getting his material from the autopsies of over two hundred cases of smallpox. He published a preliminary note, hardly two pages long, "On Bacteria in the Smallpox Lesion," August 30, 1871. This is an important date in the history of bacteriology, for it records the first staining of bacteria as a diagnostic method in the examination of pathological tissue. The completed monograph on this research was published in two parts. It was entitled "Anatomic Contributions to the Study of Smallpox." The first part, "The Skin Lesion in Smallpox," appeared in 1874; the second part, "On Smallpox-like Lesions in the Parenchymatous Organs, and on their Relation to Bacterial Colonies," appeared in 1875. So masterly was Weigert's description of the pathology of smallpox in all its details, that since then scarcely anything significant has been added to the knowledge of this disease. Though he succeeded in demonstrating bacteria in some of the smallpox lesions, he was too critical an observer to consider them as the cause of the disease. He did, however, describe the cell-inclusion bodies, known as the Guarnieri bodies, later also observed by Councilman, which have since gained significance in the etiology of smallpox.

This monograph, like its preliminary note, was epoch-making. It was entirely original, new in its methods as well as in its concepts. It marks the beginning of the study of pathological tissue in serial section by the use of the Rivet-Brand microtome, an instrument till then employed only by a few botanists. It marks, also, the beginning of differential, selective tissue staining; by employing three different dyes, hematoxylin, carmine and picric acid, Weigert succeeded in getting a clear-cut differential picture of the epithelium, connective tissue and the horny layer of the skin.

RELATIONSHIP WITH COHNHEIM, KOCH AND EHRLICH

This study on smallpox made very little impression on the contemporary pathologists, it was too radical. To quote Weigert: "One of my very few reviewers thought that my theory of primary tissue injury was in contradiction to all that was known then in pathology, therefore it ought to be discarded." It did, however, draw the attention of Julius Cohnheim to young Weigert, and he appointed him as his first assistant and *privat-dozent* in pathology in the University at Breslau. This was the beginning of a close and lasting friendship. Cohnheim was then already handicapped by severe attacks of gout and from the very first a great deal of the routine work in the Institute and in the autopsy-room fell to Weigert. Under the critical eye of his brilliant chief he developed into a pathologist of superior technique and judgment. He did not, however, take to experimental pathology in which his master shone so brilliantly; principally because he had already become absorbed in the problem of primary tissue injury and in the development of methods of technique, and to a lesser degree, because he had an aversion to animal experimentation.

It was about this time (1875) that Weigert first met Robert Koch. The latter had come to Breslau to demonstrate to Ferdinand Cohn, the eminent botanist, his culture methods by which he had worked out the life history of the anthrax bacillus. Cohn was so impressed that he sent for Cohnheim. He, too, became enthusiastic over Koch's results and he ran back to Weigert who was performing an autopsy, and exclaimed to him:

> Drop everything, and go to Koch! This man has made a wonderful discovery. The simplicity and precision and completeness of his methods are all the more admirable because he worked them out all alone, shut off from any scientific association. I regard it as the greatest discovery in this domain. I believe that Koch will again surprise us and put us all to shame by further discoveries!

This memorable meeting led to a lifelong friendship between Koch and Weigert and Ehrlich, and for many years they formed a close circle, ever stimulating and teaching one another.

Koch's demonstration of his bacterial culture methods and Weigert's work on the staining of bacteria convinced Cohnheim of the rôle of bacteria in disease. At Weigert's suggestion he repeated with the assistance of Salomonsen, an experiment which had failed earlier in Berlin, because the principle of asepsis was then unknown. This time (1877) he inoculated successfully tuberculous material into the anterior chamber of the eye of guinea pigs and rabbits. This confirmed and extended Villemin's observation made in 1865, and paved the way for Koch's discovery of the tubercle bacillus. Cohnheim prophesied this with certainty after the successful termination of his inoculation experiment, especially when Weigert observed on the autopsy table the rupture of a tubercle into the circulation in a case of miliary tuberculosis. It was very gratifying to him to have lived to see it fulfilled; he was already critically ill when Weigert announced to him by telegraph Koch's discovery.

AN ESTIMATE OF HIS INFLUENCE AT LEIPZIG

When in 1878 Cohnheim accepted the call to the professorship of pathology at Leipzig, he did so on condition that Weigert go with him as extraordinary professor. The coming of these two men began a new epoch at Leipzig. Adolph Strümpell, who was then an assistant in the medical clinic, says:

> We had some excellent men on the faculty then but Cohnheim and Weigert introduced a new point of view. For the first time the question of the etiology of disease was placed in the foreground. We were then in the prodromal stage, so to speak, of the study of the infectious diseases. Tubercle bacilli had not yet been discovered, but no one in Cohnheim's department doubted, in the least, the infectious nature of tuberculosis. In every case of tuberculosis the question of the portal of entrance of the virus and of the ways of its further spread in the body was considered in detail, a question which had been hardly thought of till then. I remember distinctly how Weigert informed me for the first time that the common so-called primary exudative pleuritis was a tuberculous affection without exception, and how we clinical assistants thereafter tried to demonstrate that relationship in every such case. How eagerly we discussed the etiology of tuberculous meningitis, bone tuberculosis and especially acute miliary tuberculosis! How zealously we sought in autopsies of cases of miliary tuberculosis the focus which had broken into the venous circulation to overwhelm the whole body! How great was our joy to confirm with another case Weigert's discovery of tuberculosis of the veins!

To quote Strümpell again:

> Weigert strove particularly to coordinate the disease phenomena of the different organs under one general pathological law. His pet idea, in many ways the pillar of his general pathological viewpoint was his conception of tissue injury as the primary disease phenomenon which results in a disturbance of equilibrium of the tissue elements and subsequent cell proliferation. This was his Schiwa theory. How often the one word "Schiwa" spoken by him along with an expressive look was enough to clear up for us a whole controversial question in pathology!

Weigert made practically all his bacteriological contributions in Breslau; these form the first phase of his scientific effort. In Leipzig he completed, in 1882, his first myelin sheath stain, and this marks the beginning of the second phase of his activity, a period rich in the creation of pathfinding methods of histological technique. There, also, he made some of the best of his contributions to general pathology, particularly his work in miliary tuberculosis and in Bright's disease, so that he became recognized, especially so outside of Germany, as one of the foremost pathologists of the time.

Failure to Receive Academic Recognition

As Cohnheim grew steadily more and more sick, and his periods of incapacity longer and longer, the bulk of his routine work and of his teaching fell to Weigert. When the chief died in 1884, everybody looked to Weigert as his logical successor, but this promotion was denied him because he was a Jew. There seems to be a concensus of opinion among the writers that this was the reason for the failure of the Leipzig faculty to recognize him. In a personal communication Professor Councilman says: "Weigert was certainly refused academic promotion on account of his religion, but I do not know it was ever suggested to him that the promotion awaited him should he change his faith. In fact, he was so well known as a Jew, that the change would have been impossible, and knowing him as I do, I am sure he would never have thought of it." Dunham and Herter state that the Leipzig faculty did offer him a public call to the university on condition that he would not accept it, a proposition which Weigert would not listen to. Lichtheim cites the fact that Leipzig wanted Robert Koch as Cohnheim's successor; Koch, still in the health service, was inclined to accept it but on condition that Weigert would be placed in a secure position at the head of the department of pathology, while he himself would take charge of bacteriology and the allied subjects. To Weigert's sorrow, however, this plan did not go through, for Berlin would not let Koch go.

This was a crisis in Weigert's life. He could not with any self respect remain as assistant at Leipzig. Because of his straitened circumstances, his parents depending on his scanty earnings then, it looked for a while as if he might have to fall back to the "misery of general practice." His friends knew that he would not succeed at such work and the physicians of Frankfurt-am-Main made a place for him as director of the Senckenberg Institute for Pathological Anatomy and as pathologist for the Frankfurt hospitals. There he remained for twenty years until the end of his life. His work there stamped him, in the estimation of scientists outside of Germany, as one of the foremost pathologists of his time, as one of those who had made Germany preeminent in modern science, a worthy successor of Cohnheim, Virchow or Henle. Still not once during the twenty years after his rebuff at Leipzig did he receive a call to a German university, though each one had had one or more vacancies during that period.

Weigert never fully recovered from this disappointment and his friends speak of the periods of depression into which he fell at times. The thought that he had been rejected largely because he was a Jew was a standing offense to his sense of justice. Still he was very happy in Frankfurt, and was ever grateful to the physicians of that city for befriending him in his time of need. His stimulating influence was soon felt and before long the Senckenberg Institute attained an international reputation where side by side sat picked students from all the countries of Europe, from North and South America, from Japan and from Australia, and as they returned to their homes they spread the influence of his genius everywhere. His duties at the Institute gave him ample time to carry on the investigations which made him so preeminent. Some of his great contributions to histology and pathology were made there but this epoch of his life is particularly characterized by his researches in botany, zoology and embryology through which he sought to formulate the results of his many years of study into a universal law applicable both to plant and animal pathology. Besides his own work, numerous investigations were stimulated by him. Through his new methods and ideas "the crumbs from the master's table were rich enough to furnish ample material for countless scientific feasts." This tribute he had himself paid to his master, Julius Cohnheim, but it may justly be applied to him as well.

His townspeople as well as his students and assistants soon recognized his worth and held him in great esteem and affection. As time went on he became greatly attached to Frankfurt and gave up all thought of leaving it. In his later years definite plans had been worked out for an enlarged institute for him. He was particularly happy when in 1899 the Institute for Experimental Therapy under the directorship of Paul Ehrlich was moved to his city. This gave these two great congenial spirits opportunity for daily communion. An honorary membership in this Institute, and later, an appointment by the Prussian Ministry of Education as medical privy councilor were the only honors bestowed upon him in his native land. Only a short time before his death his friends began to plan for the publication of his collected writings in honor of his sixtieth birthday.

PERSONAL TRAITS

Weigert is described as "a man of medium stature with a large, well-balanced head, his beautiful eyes expressing gentleness and intelligence." His sympathetic and joyous nature and his interest in all kinds of human endeavor and in all sorts of people made him a general favorite. As previously mentioned he had an aversion to animal experimentation. "The animals at the Senckenberg Institute," says Rieder, "led an enviable existence. It is true that the laboratory director did some work with them daily, but it was chiefly to feed them with the meal he had brought for himself."

He was gifted with a rare talent for storytelling and ventriloquy, and used it liberally to the great entertainment of his friends. It is said that evenings at medical conventions he would have many more colleagues in his room or in the lobby to listen to his stories than would be present at some of the scientific meetings. Intimate contact with his foreign students made him a proficient linguist, and so his Scandinavian friends took pride in his reading Ibsen and Bjornson in the original.

Though very skilful in scientific discussion, he rarely entered a controversy, and then only in defense of some friend. A notable example of this was his stand in behalf of Robert Koch in 1883 in the trying tuberculin days.

He was modest to a fault and greatly underestimated his own worth; so much so that some of his friends thought this a factor in his failure to gain academic recognition. In his later years, after returning from a medical congress in Belgium, he related with great astonishment how he had been received with as marked honor as that bestowed upon two renowned Berlin professors.

All his work shows a remarkably high degree of craftsmanship; still it was always the result of slow, deliberate and careful effort. He did not seek fame or priority and never published till he had studied his problem most diligently from every point of view and then only when he felt that he had something worth while to impart. His friend Lichtheim recalls that he had completely rewritten the monograph on smallpox at least six times before he was at all satisfied with it. He had devised his elastic fiber staining method in 1887, but it remained unpublished for eleven years. "There are enough elastic tissue fiber stains, there is no need of a new one," would be his answer to his friends. He finally announced it when he realized that his method yielded better results than did the others. He worked out his methods to their smallest details and he did not consider one ready until it would give perfect results even in the hands of a beginner. It was common knowledge among his friends that he had worked three years to perfect his myelin sheath stain, and that he had been working for seventeen years on his neuroglia staining method. The latter he did not consider completed and as his body lay on its bier there was filtering in his laboratory a solution designed to improve it.

He worked literally to his very end, but in the last year he felt his energy slipping. However, he looked forward with eagerness that summer to a visit to the United States, where he was to lecture at Johns Hopkins. On August 4, 1904, at the close of a Sunday agreeably spent with his friends, he retired to his room to read. There, in the simple room in the boarding house where he had lived for twenty years, since his arrival at Frankfurt, he was found dead the following morning. Death was due to coronary thrombosis.

The great stir created in Frankfurt by the sudden death of Weigert was testimony of how highly he was regarded by the entire community. He was esteemed for his scientific attainment and also for his genial, cheerful, lovable nature, for his modesty and contentedness and for his utter lack of selfishness. "He was like unto Spinoza," said his pupil Rieder, "he had in common with him not only his Jewish origin, but also an incontrollable striving for knowledge and truth and a noble love for humanity."

WEIGERT'S RANK IN THE HISTORY OF MEDICINE

What is Carl Weigert's standing in the history of medicine? He was one of the most eminent pathologists of his day and his numerous investigations were distinct contributions to medical knowledge. He devised methods of bacteriological and histological technique which helped to lay the foundations of several of the medical sciences. But primarily he stands out as a philosopher. He was a profound thinker who, by his broad imagination and keen vision, perceived fundamental principles in the morphological processes which he studied. All his masterly research was but a means to one great end, to find general laws for morphological processes in pathology tested and confirmed not only in pathology but in the collective biology of the animal and plant kingdoms.

THE "SCHIWA" THEORY

He begins his monograph on smallpox, his very first research, with a question: "What specific changes in the tissue elements determine the characteristic gross structure of the numerous pathological processes?" He had found that the pathological phenomena of the smallpox lesion fall into two distinct groups: (*a*) the necrotic, which are the primary, and (*b*) the irritative, which are the secondary. The latter, consisting of exudation, cell proliferation, suppuration, etc., have nothing specific about them; they are found in all possible pathological conditions; any foreign body or loss of substance may call them forth. The necrotic process on the other hand is specific in so far as it gives a specific structure to the eruption. In his study of the smallpox eruption he described a change in the epithelium, never before observed, wherein the cells, injured by the smallpox virus, lose their nuclei and being saturated by the lymph from the adjoining living tissue, become a coagulated, fibrin-like mass. The discovery of this form of tissue injury, named later coagulation necrosis by Julius Cohnheim, made the problem clear to Weigert and is the beginning of his "Schiwa" theory. There is a record of this in his own words in a paper found among his manuscripts after his death, pencil-marked "Historical Notes on Schiwa."

> My observations on the role of outer influences on the bioplastic processes reach back a long time. It was at the time of the great smallpox epidemic when I had a fine opportunity to investigate the smallpox eruption. I then found to my great astonishment that the primary affection in the skin lesion was not an irritation but a necrobiosis. Already then did I recognize that this necrosis, by virtue of its site and nature, gave a specificity to the process, in contradistinction to the other phenomena in the skin lesion. It also became clear to me then that I was on the approach to a general law; and already then, between 1871 and 1873, I repeatedly ventured the opinion in a small circle of friends, that the primary condition in a pathological process is the passive tissue injury and not the active cell proliferation. Only Lichtheim, Senftleben and Wernicke remain of that circle. We named this theory, half in fun, the Schiwa theory, after Schiwa, the Hindoo god of destruction. I made my first public announcement of this in November, 1873 and it was published in April, 1874 . . . I then set down the condition that in the study of pathological irritative phenomena one must seek for a primary necrobiosis upon which are based the special properties of the many varying pathological processes. My task now was to investigate my theory under varying pathological conditions . . . I sought to show the truth of my position in different processes, in diphtheria, in inflammations of the kidneys, in chronic myocarditis, in cirrhosis of the liver, in the degenerations of the gray matter of the central nervous system, in the fibrinous inflammations of the serous membranes and of the lungs and in catarrh of the mucous membranes. Then, in 1880, with the support of these investigations to my theory, I attempted to bring it out in an intelligible form. I stated that pathological tissue proliferation is entirely analogous to physiological regeneration or repair. I now sought to make physiological repair mechanically intelligible through the teaching that diminution of growth restraint influences both physiological and pathological repair.

This was a direct attack upon the doctrine of Virchow, long accepted without question, that inflammatory cell growth is the result of the action of external stimuli, the so-called inflammatory irritants, upon the cells, which are thereby directly incited to grow and multiply. Weigert denied absolutely the power of any external agencies to stimulate directly cells to proliferation. He considered that to concede such a bioplastic power to external agents was equivalent to the acceptance of a kind of spontaneous generation of living matter. To Weigert the phenomenon of cell proliferation is identical in both normal, that is, physiological, and pathological conditions. The cell is to be considered as a machine for the evolution of energy. Motion, for example, demands the liberation of energy; secretion and discharge of various formed substances from the cells indicate similarly a discharge of potential energy; in the warm-blooded animals the increase in the temperature as a whole above that of its surroundings necessitates that the individual cells liberate energy in the form of heat. The nerve cell liberates energy akin to electricity. On the other hand, growth and cell multiplication demand not the evolution but the storage of energy. Therefore growth and multiplication, on the one hand, and the performance of other functions by the cells, on the other hand, are widely different. In the first, energy is stored up; in the second, energy is dissipated. Weigert speaks of the first as the bioplastic or vegetative phase, and of the second as the catabiotic or functional phase of cell activity.

PHYSIOLOGICAL AND PATHOLOGICAL CELL PROLIFERATION

Physiologically cell proliferation in the organism is seen preeminently during growth, at puberty and, in the female, during pregnancy. These cell processes are preestablished to the smallest detail. Their source is the bioplastic energy resulting from the union of the ovum and the spermatozoon. This vegetative activity of the organism is dependent on external conditions only to a very small extent. It needs for its realization such factors as food, heat and light; but the force and direction of growth is inherent; it comes from within, it is inherited. This inherent force utilizes and directs the external factors so that, for example, an organism will assimilate only such and as much food as is characteristic for its species, or it will attain a size which is typical for its race. Development and growth are bound to follow paths determined at birth. Under unfavorable conditions they may not reach the goal, but they cannot change their course. When an organism completes its full growth it remains unchanged in its makeup in spite of the fact that the cells are subject to the same external living conditions as before; further growth or cell proliferation is barred by the equilibrium resulting from the inter-relationship of the various body constituents, holding each other in check. Weigert called this state of maturity "bioplastic rest." This bioplastic rest, however, is only apparent, for the tissues of the body are constantly being worn out and the used parts must be replaced. There is no loss of energy when an organism ceases to grow; where it was kinetic, building living substance out of nutritive material, it now becomes potential, held in restraint by the reciprocal normal equilibrium of the tissues. But the potential energy can at any moment be changed back into the kinetic form when this equilibrium is disturbed, a condition constantly present in the functioning of the organism, which is, in effect, a physiological tissue injury. This tissue injury by disturbing the correlation of tissues removes the physiological restraint which one tissue exercises upon another and is thus the real stimulus through which the latent inherent power of growth of the cells becomes active again. Through it, premature senility of the tissues and quick death of the organism is avoided. Physiologically tissues used up during the functioning of the organism are replaced by like tissues; gland cells are replaced by gland cells, and epithelial cells are replaced by new ones. In the higher animals the bioplastic energy is divided among the cells for the attainment of greater functional power. This differentiation or specialization, however, entails a weakening of the powerful bioplastic force. For a long time after growth of an individual ceases this force is in condition to restore the tissues after functional injury but eventually this power wanes. The tissues are only partially restored. Finally one or another vital tissue fails to serve and then our fate, Death, steps in.

In pathological processes as in physiological repair cell proliferation is also caused by a transformation of the bioplastic energy from the potential form to the kinetic. After a hemorrhage the lost blood is soon replaced; in the case of bone fracture new bone substance is formed to fill the gap. In pathological processes, however, tissue injuries are more extensive than in the physiological processes and so the restraint which holds the potential energy is removed to a greater extent and an overproduction of cells will take place. This, in brief, is what Garrison calls Weigert's "quantitative" law: The amount of repair in an injured tissue is always more than is necessary to replace the loss. Physiologically this overproduction is seen only under certain conditions, as in the work hypertrophy of muscles. In pathological processes, however, it is the usual phenomenon, for example the excess of red blood corpuscles soon after hemorrhage and callus formation after bone fracture.

Some phenomena, however, are seen in pathological processes which do not take place at all in physiological body functioning. Old injured tissue elements may not be replaced by like elements; this is seen when the common matrix from which the homologous cell must grow is entirely destroyed, as when an entire hair follicle is destroyed or when the irritating factor repeatedly destroys all cells of a certain type, which may be the case with renal epithelium. Again, such highly organized cells as the neurons have no power of regeneration; once they are destroyed, they cannot be replaced. In such cases new connective tissue is formed to fill the gap. There is still another possibility whereby the normal reciprocal equilibrium is changed under pathological conditions which does not occur physiologically. This happens when proliferative cells are brought to a place where they do not belong. This is seen in the case of metastasis of malignant tumors.

In spite of these external variations Weigert holds that pathological and physiological cell reproduction are essentially the same in nature, that neither can be initiated by external factors. The impulse to growth comes only from inherent cell energy, which becomes active with the disturbance of tissue equilibrium through injury. Disease signifies pathological injury of the organism and whenever there is a disturbance of function there is necessarily a demonstrable primary injury of living tissue, "except in the rapidly diminishing exceptions for which our technique is not yet fine enough." He was firmly convinced that these, also, would disappear with more thorough search and improved methods. Apropos of this, Welch says:

> In putting to the test of actual observation Weigert's hypothesis, we have been led to recognize the frequency and the importance of primary injuries to cells inflicted by external agencies. Not only various degenerations and necroses of entire cells, but more subtle and partial damage of cytoplasm and nucleus have been made the subject of special study. It has been recognized that our older methods of hardening tissues reveal often only very imperfectly the finer structure of cells, and new and better methods have been introduced which enable us to detect more delicate lesions of cell substance, which formerly escaped attention, as is well illustrated in recent studies of neuropathology. Weigert's postulate of some primary injury to the tissues as the immediate effect of mechanical, chemical and other external agencies, which were formerly regarded as the direct stimuli of cell growth and multiplication, has been fulfilled in many instances where such damage had previously been overlooked or unsuspected. It is his belief that in cases where we cannot now detect such primary injury, more thorough search and better methods will enable us to do so.

HIS THEORY OF INFLAMMATION

Perhaps the most important modification of former pathological conceptions resulting from this belief was in relation to the chronic and interstitial inflammations, or the fibrous processes. The older view was that in these processes the active essential feature of the disease was the new growth of connective tissue which strangled the more highly organized cells of the part. Weigert studied these processes in the heart, the kidneys, the liver and in the central nervous system. By employing his own exact histological methods he found that the primary and important lesion was the degeneration, atrophy or necrosis of the specialized cells, the parenchymal cells, their place being taken by the new growth of interstitial tissue. He asserted that there is no primary interstitial inflammation. The new growth of interstitial connective tissue is only a secondary reparative phenomenon, when the parenchyma is not replaced again. He saw in inflammation only a reparative process arising from the setting aside of physiological growth restraint by a primary tissue injury with the resulting rejuvenation of cell activity; the tissue injury also calls forth cell immigration, responsible for the classical cardinal symptoms, rubor, calor and dolor, but this is entirely independent of cell proliferation.

Weigert's investigation of Bright's disease (1879) yielded not only support for his conceptions of inflammation and of coagulation necrosis but it has become one of the classics in the study of nephritis. Julius Cohnheim considered it the clearest pathological description of the nephritic processes. Even contemporary writers consider it to have recognized the essential morphological changes of acute and chronic nephritis and to have given a most satisfactory morphological classification of the nephritides. This classification is based on his solution of two problems he had set himself. First: Is there a (chronic) parenchymatous nephritis without interstitial cell proliferation and contraction, such as appear in the small red kidney? Secondly: What is the relationship between disappearance of epithelium and new connective tissue formation? His answer to the first question was: "No"; to the second, "Whenever epithelium or its analogous parenchymal structure is destroyed, there takes place, under certain given conditions, a new interstitial connective tissue formation."

It may be of interest to present this classification of nephritis in his own words:

1. To the first group belong those forms in which there is frequently only a small cell proliferation in the connective tissue (acute nephritis). With this there are hemorrhages. Clinically there is scanty urine, a lot of albumen, red and white blood corpuscles, casts, sometimes edema; no cardiac hypertrophy.

2nd Group. Subchronic form (originally described by me as chronic hemorrhagic nephritis). Here there are already many connective tissue proliferations in the interstices and in the Malpighian capsules, endarteritis obliterans, without diminution in the size of the whole kidney. With this there are hemorrhages, cardiac hypertrophy, retinitis, uremia, edema, a urine rich in albumen and with more or less blood.

3rd Group. Chronic forms. More marked and microscopically recognizable contractions with retention of the larger part of the parenchyma. With this there is cardiac hypertrophy, etc. The edema, albumen, and quantity of urine varying in different individuals.

4th Group. Very chronic forms. Granulation atrophy. Markedly diminished kidneys with very little parenchyma left. Fused contracted areas. Cardiac hypertrophy, etc. No edema. Polyuria with little albumen.

All these forms, especially of the first three groups, have a red and white form which are not distinct but only phases of a progressive process. In the latter there is always a high degree of edema and also a rich albumen content.

These anatomic clinical types need not be considered as true disease entities. Apparently the same etiological factor may call forth different forms under varying circumstances, as we see in amyloid and in scarlet fever, and vice versa, the same forms, as for example, the contracted kidney, may be due to different agents. The pathogenic basic principle in these modifications is so simple that it may be called forth by very different injurious substances. Circulatory changes, dyscrasias, like lead poisoning or gout, infectious agents, all can cause destruction of epithelium, which in turn will bring about interstitial proliferation.

As in nephritis so also in cirrhosis of the liver, Weigert found support for his teaching of primary tissue injury followed by secondary connective tissue proliferation. In atrophic cirrhosis it was alcohol, phosphorus, etc., that injured the liver cells, while in hypertrophic cirrhosis it was the pressure of bile stasis which injured the liver cells.

Weigert took an unusual interest in the genesis of the sclerotic processes of the brain and spinal cord. As early as 1879 he said: "One must group the cord degenerations with the chronic nephritic, myocarditic and cirrhotic phenomena." After his discovery of the neuroglia stain his studies led him to conclude in 1890 that the neuroglia proliferation was secondary to a primary injury to the parenchymatous elements similar to that of the connective tissue in relation to the parenchyma of the kidneys, heart, liver, etc.

> No matter what the cause of the disappearance of the nerve tissue, always does the neuroglia respond with proliferation as does the connective tissue in the disappearance of kidney or liver parenchyma in the so-called chronic interstitial inflammations in spite of the physiological and histological differences between neuroglia and connective tissue.

COAGULATION NECROSIS

As previously stated, Weigert had determined early in his work that the nature of tissue injury which he most commonly met was a change of the cells and the tissues into a coagulated fibrin-like mass involving the disappearance of the nuclei. This occurs whenever cells die but still remain in continguity with living tissues so that they can be saturated with blood and lymph. To this Julius Cohnheim had applied, in his "Lectures on General Pathology," the term coagulation necrosis, and Weigert accepted it as perfectly suitable. Following his work in smallpox he studied this form of necrosis experimentally in animals and then in the fibrinous processes in the different organs of the body. He found coagulation necrosis closely related to fibrin formation and showed that only parenchymal cells, and never interstitial cells, undergo such necrosis. His work on croup and pharyngeal diphtheria, till then considered separate entities, gave the anatomical basis for Wagner's contention that these two conditions were identical. Besides, it gave shape to his general teaching on coagulation necrosis.

The classical example of coagulation necrosis is infarct formation such as is seen in the heart, kidneys, liver, spleen, lungs, and the central nervous system. Chronic myocarditis Weigert considered not an inflammatory phenomenon but the result of infarction of the heart muscle caused by thrombotic or embolic obstruction of the coronary arterioles, or the result of cell necrosis caused by toxic substances or by strain, the dead muscle of fibers being replaced by connective tissue. Similarly, he considered the areas of sclerosis in the central nervous system and tuberculous caseation as forms of coagulation necrosis. In connection with the latter it should be mentioned that he was first to point out that tuberculous pus showed detritus without nuclei in contrast with the ordinary phlegmonous pus.

Injury of cells does not always mean their complete destruction and this led Weigert to the very fruitful conception of the principle of partial necrosis of cell protoplasm. He held the cell to be a unit but did not consider it as indivisible. He pointed out that, in the ordinary functioning of an organism, there was constantly a using up of living substance, the dead material being frequently used for other needs of the organism. So the goblet cell gives up part of its body without impairing the remaining part. So also, dead particles such as coal, may remain in cells without disturbing their function. The experiments of Chabry interested him greatly. This investigator in 1888 got partial injury of the ovum of Ascidia aspera and Strangylocentratus lividus by pressure of varying intensity with a blunt needle; thus he could produce irregular cell division, giant cell formation, and necrosis of the ovum. Such conditions Weigert himself had in 1885 considered necessary for the genesis of the giant cells in tuberculosis, syphilis and actinomycosis. As early as 1879 he demonstrated a partial coagulation necrosis in renal epithelium, the inner portion of the cell being changed into a hyaline mass while the nucleus-containing outer portion remained unchanged. He demonstrated a similar condition in waxy degeneration of muscle. This conception of partial cell necrosis has borne remarkably rich fruit especially along two lines. In the first place embryologists have recognized it as an important factor in abnormal development. Secondly, Paul Ehrlich developed his famous side-chain theory of immunity directly upon two conceptions of his cousin, that of partial cell necrosis and the resulting excessive repair proliferation.

Work on Tuberculosis

Weigert's work on coagulation necrosis led him to pay particular attention to tuberculosis, "this most common of diseases." He was among the first to show anatomic evidence for the curability of tuberculosis. As early as 1882 he said: "With careful search healed or quiescent areas are found in pulmonary tuberculosis." In 1883 he said: "We must abandon the idea of the incurability of tuberculosis inasmuch as many tuberculous processes previously not recognized as such, as scrofula and joint tuberculosis, are frequently enough seen healed." He showed that hemoptysis causing death in tuberculosis was due to the ruptured arterioles which had taken on an aneurysmal character and which were located in cavities. He was among the first investigators to show the frequency of mixed or secondary infections in pulmonary tuberculosis.

He was first to call attention to the fact that tuberculosis was frequently different anatomically in childhood than in later life. In children pulmonary tuberculosis is usually not a primary process as in adults but spreads through contiguity from peribronchial lymph-nodes. Thus, in children, the apices are not involved, the main process being in the region of the lung roots about the lymph-nodes. The lymph-nodes fuse with the bronchi, an abscess is formed and ultimately a friable tuberculous mass ruptures into the bronchus; this accounts for the relative frequency in children of caseous pneumonia and caseous masses in the spleen, kidneys and liver.

In regard to tuberculosis of the serous surfaces Weigert laid down the following principle: tuberculosis of the serous surfaces is always a secondary disease. There is no primary tuberculous pleuritis, pericarditis, or peritonitis. In pleuritis the primary seat is probably a contiguous lymph-node, in pericarditis a mediastinal lymph-node, and in peritonitis it is a mesenteric lymph-node, a perforated intestinal ulcer or, in the female, a tuberculous tube.

He was among the first to point out that pulmonary tuberculosis is not a general infection, or a septicemia, an idea quite firmly fixed in his time. He showed that phthisis manifested itself through a direct implantation of the tuberculous virus in the respiratory tract; the next stage being a local lung involvement, spreading through the lymph system to other parts of the lung, to the larynx, bronchi and intestines, and finally through contiguity to the pleura, pericardium, and peritoneum. Acute general miliary tuberculosis following a localized process is unusual. It is a rarity to find tubercle bacilli in the circulation in cases of phthisis. The lymph-nodes and, especially, their capsules are a defensive system, as are the fascia and the vascular walls which tend to keep the disease from spreading. As early as 1883 he explained the frequent occurrence of tuberculosis in the wake of measles as follows:

> Many children have tuberculous foci in lymph-nodes without any external manifestation. When these lymph-nodes are changed through some other disease, as measles, so that their capsule fuses with the surrounding tissue, a way is opened for the virus to attack other organs and a latent tuberculosis becomes an active one.

How is general miliary tuberculosis brought about? Weigert's answer came from many observations at the autopsy table beginning in 1877. There is a rupture into a vein or into the thoracic duct of a tuberculous focus adherent to the vein or duct, which causes a sudden overwhelming of the circulation with tubercle bacilli. Before Koch's discovery of the tubercle bacilli, Weigert used the term tuberculous virus. Any of the veins of the body may be so affected, but the pulmonary veins, the veins of the neck, of the thyroid, and of the kidneys, as well as the thoracic duct, are most commonly involved. Rarely, the arteries are involved. Through a similar process Weigert accounted for the appearance of pneumonoconiosis and general carcinomatosis.

Bacteriological and Histological Technique

Weigert is now best known for his methods of histological technique. To him, however, they were but a means to an end. His aim was to create a technique which would make possible the demonstration of injury in all disease forms. Up to the eighties of the last century microscopic examination of objects was done either in water, or after preparation with acetic acid, potash, or iodine. Carmine and hematoxylin were the only stains used, so that everything in a preparation was either red or blue, or if chemicals were used, the tissues were so changed as to make them useless for pathological study. Weigert created selective staining methods, true microchemical reactions, which made possible clear microscopic pictures of the most hidden structural elements, differentiable from other elements. As noted above he began his pioneer work on selective staining in his research on smallpox in 1871. Studying the skin lesion in smallpox in serial section, he demonstrated bacteria in that lesion by staining them with ammonium-carmine solution followed by washing the preparation in a solution of hydrochloric acid and glycerine. Robert Koch laid the foundation of bacteriology by creating methods of bacterial culture but Weigert must be ranked with him as a co-founder of this branch of science, because it was he who created the methods of bacterial staining. For this Koch always gratefully acknowledged his debt to Weigert.

In this same great work on smallpox he showed that micro-organisms, both cocci and bacilli, could be stained with the basic aniline dye, methyl violet. In describing this method he mentions that, "frequently it is desirable, before washing with alcohol, to treat the preparation with a dilute acid." This is the principle of differentiation by decolorization and Gram's method is based directly on it, as is also the "acid-fast" property of bacteria established by Ehrlich in his stain for tubercle bacilli. In 1879 he introduced the use of gentian violet and subsequently he used carboxyl, acid fuchsine, aniline oil and Bismarck brown. In 1881 he introduced the method of double staining. "I found that gentian violet had a greater affinity for bacteria than did carmine, but on the other hand the latter stained the nuclei. Based on this I then instituted double staining, so that nuclei appeared red and bacteria blue." Previously Weigert had noted that nuclei and bacteria took the same stain, while the spirilla of relapsing fever and the spores of actinomycosis took the same stain as the cytoplasm.

With the aid of his new methods Weigert was able not only to stain bacteria for diagnosis but to do so without destroying the rest of his preparations. Thus he was the first one to study the tissue changes as a result of bacterial invasion and was among the earliest to recognize that bacteria injured tissues through their toxins. In 1874 he demonstrated bacteria in the blood-vessels and in 1877 he showed their mode of dissemination through the circulatory system both in animals and in man. At first he was inclined to consider the masses of cocci found in the smallpox lesion as the possible cause of the disease but, not finding them constantly and also seeing them in numerous other conditions, he came to consider them as secondary manifestations of a still unknown virus.

No less significant in their general effect on medical science were his four great histological methods, well planned out and correlated, created for the study of the intercellular substances: the myelin sheath stain (1882–1885), the fibrin stain (1887), the elastic fiber stain (1887, published in 1898) and the neuroglia stain (1890–1904). These four truly selective staining methods make it possible to demonstrate with almost mathematical precision these interstitial tissue fibers in their finest details, so that their presence or absence lead to valuable conclusions in regard to physiological or pathological conditions.

HIS INFLUENCE ON THE DEVELOPMENT OF NEUROPATHOLOGY

One of the last books which Weigert received was dedicated to him. It was Alzheimer's "Anatomy of General Paralysis." The dedication reads: "To the master who created our technique." This is quoted from Edinger's essay, and he adds: "That, Weigert was indeed." For twenty years carmine staining of the central nervous system satisfied everybody except Weigert; it brought out the grosser elements. Weigert undertook to find methods which would make possible the recognition of the different elements. The search for a myelin sheath stain lasted three years (1882–85). The difficulty lay in the fact that the fat-like myelin sheath does not take any stain. Weigert overcame this by the use of the mordant method, commonly employed in textile technique. In this method the myelin is stained after being hardened and impregnated with a substance that takes the dye. Edinger says this method created the comparative anatomy of the brain, and without it scientific neurology would not have been possible today, and Schmaus asserts that it made possible the greatest part of recent progress of the knowledge of the anatomy of the spinal cord.

The development of the neuroglia stain method occupied a good deal of his time during the last seventeen years of his life. Even then he was not satisfied with it. Hundreds of nervous systems were examined, new changes were always introduced into the method, harder test objects were always set. His spirit would not be free, he said, as long as he had to fight with the incompleteness of a method. In 1895, at the request of friends, he reported his findings on the neuroglia in the normal central nervous system; nothing has been added to the knowledge of this tissue since. On its pathology there is only one report from his pen and that was published after his death in 1904. In it he noted that the changes in tabes dorsalis are not confined to the spine but are regularly found in the hind brain, and also that in tabes the changes are identical with those observed in general paralysis.

WEIGERT'S "BIOLOGISCHES TESTAMENT"

Weigert's sudden death left the work of his last years incomplete. For some years he had been deeply engrossed in preparing what he had called his "Biologisches Testament." Five chapters of this work, entitled "An Attempt at a General Pathological Morphology Based on the Normal," were completed: ten chapters remain fragmentary. From this manuscript it is evident that it was his intention to formulate the results of his many years of careful research in the light of his more recent biological observations into a great universal law applicable both to animal and plant pathology. The essence of this law in the words of Robert Rieder is as follows:

> The organic world reflects itself from within out, not from without in . . . External factors such as heat, light, atmospheric pressure, nutrition and the like are conditions of life, but not causes of life. They are instruments for the realization of the specific idioplastic potentiality of the organism. Growth is not a mechanical reaction to an outer force, it is itself the force, the manifestation of a living functioning plasma.

His friend Lichtheim wrote:

> Weigert's death created a great stir in the medical world, such as occurs only when a great man dies. And Weigert was truly a great

man; in spite of the unassuming position which he held, he was one of the most active and successful investigators among the pathologists of his day. He was both a master of technique and a profound thinker, and he did not hesitate to attack the most fundamental problems of life and death.

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LAZZARO SPALLANZANI*

(1729–1799)

By G. E. BURGET

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During the eighteenth century Italy was many times exposed to the invasions of foreign armies. Her states were transferred from one tyrannical rule to another and her university towns were often camps for hostile armies. Yet in a little group of universities in northern Italy the sciences were being hastened in their metamorphosis with more than usual speed. The din of war may have been an added stimulus to those in search of truth and new facts. Science knows no enemy but falsity; truth recognizes no boundary lines. Padua, Pavia, Bologna, and Modena at different periods in the century bloomed with the discoveries of their brilliant philosophers. In the very shadow of these institutions of learning Lazzaro Spallanzani was born at Scandiano, January 10, 1729.

His father was an advocate of considerable distinction. He, rather than the mother, seems to have presided over the youth's elementary studies. His genius showed itself early, morever, as may be inferred from the fact that his youthful companions called him "the astrologer." At fifteen he went to Reggio where he studied rhetoric and philosophy under the tuition of the Jesuits. His ability attracted the attention of the Dominicans who endeavored to induce him to enter their order. Instead, his longing for knowledge led him to Bologna where the critical period of his learning was perhaps directed by his cousin, Laura Bassi, deservedly celebrated for her knowledge of philosophy and mathematics. Not alone was philosophy studied but also antiquity, Greek, Latin and French, and even natural history. To Spallanzani the thing itself was much more interesting and fascinating than anything that might have been written about it. As his father desired that law should be his profession, Spallanzani also studied law. At the point of taking his degree the naturalist, Antonio Valisneri of Padua, intervened with the father and Spallanzani was allowed to follow the bent of his own talent. That talent was in natural history.

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Early in his career he took Holy Orders and is still spoken of as the Abbé. At twenty-five he was chosen professor of Greek, logic and mathematics in the University of Reggio. Even with the strenuous duties of teaching here he did such brilliant work on infusoria as to attract the attention of Charles Bonnet of Geneva and von Haller, then retired to his native city of Bern. Modena, Spallanzani's native university, called him to the chair of physics in that institution in 1760. Although only thirty-one years of age at this time he had received offers from various other institutions including the Academy of St. Petersburg. He was attached with considerable sentiment to the Modena University but in 1768 an offer by Empress Maria Theresa, then ruling over Austrian Lombardy, to give him the chair of natural history and keeper of the museum at Pavia proved too attractive to be refused. He held this position until his death thirty-one years later.

Lazzaro Spallanzani
(1729–1799)

During this period (1768–1799) it will be remembered that Scarpa (1747–1832) and Tissot (1728–1797) also lectured at Pavia. Volta (1745–1827) at the same institution was studying electricity and two years after Spallanzani's death showed by the invention of the pile the analogy between galvanism and electricity. The energy thus excited is now spoken of as "voltaic electricity." Galvani (1737–1798) was public lecturer in anatomy at Bologna and in 1790 discovered that the contact of two different metals with the nerve of a recently killed frog will excite distinct muscular contraction. Morgagni (1682–1771), the founder of modern pathological anatomy, was a professor at Padua. After the French under Napoleon invaded Italy in 1796 Spallanzani was offered the position of professor of natural history at Paris. This he declined because of his advanced age. February 11, 1799, three days after an attack of apoplexy, having recovered sufficiently to recite Latin verse and having received the papal benediction, he died suddenly at 2:30 A.M. The illustrious Scarpa attended him.

Spallanzani had the ability that characterizes the true philosopher. Nature had blessed him with a magnetic personality. Although a priest and savant he was no recluse. He loved to hunt and fish and in early life was enthusiastic over chess and football. He had a robust frame, was about middle size, and had a high forehead, black eyes and a brown complexion. His countenance was dark and pensive. He was fond of society and enjoyed the company of the *signore* especially when grace and beauty were combined with refinement and a love of literature and science.

His seriousness of mind while yet young is shown in that one of the earliest problems to attract his attention was the origin of vitality. He was teaching in Reggio when Needham (1713–1781) was setting forth his theory of spontaneous generation. Buffon (1707–1788), the French naturalist, claimed that the small microscopic organisms seen in putrefaction and in scum from ponds were but particles of matter arising from the disintegration of previously existing matter possessing the property of movement. He termed these "organic molecules." Needham boiled beef infusion and placed it in a stoppered vial only to find that putrefaction later took place. Since boiling must have killed the animalcules and since the vial was kept well stoppered, he argued that living things must have had their origin in a special vegetative force, spontaneous generation. Charles Bonnet (1720–1793), a naturalist of Geneva whose life must have greatly influenced Spallanzani since the two were the closest of friends, wrote an article in 1762 designed to refute the theory of epigenesis. Bonnet pointed out that in Needham's experiment the vials could not be considered hermetically sealed and that organisms in fluids might resist the boiling temperature for short periods. Spallanzani took up the problem at this point. He showed that Needham was right in his statement that living organisms always appear in boiled infusions introduced into stoppered bottles. He found also that even though the bottles were hermetically sealed with air excluded organisms appeared in the infusion. He suspected that the organisms might exist on the inner surface of the bottles and consequently he heated them in a flame and then introduced the infusion. Still organisms appeared. They might have entered with the air during the process of cooling. Finally to test this supposition he put the infusion into flasks, hermetically sealed the flasks, and subjected them to the heat of boiling water for an hour. No organisms appeared but if the sealing were disturbed so as to let in a bubble of air, organisms were soon found. The conclusion was impregnable: living organisms or their eggs or spores were necessary for putrefaction; the theory of spontaneous generation was upset. He followed the work still further, testing the effect of different temperatures and various substances such as oil of turpentine, camphor, sulphur, brandy, wine, etc. He even subjected the infusion to the electric shocks of a "Franklinian battery." He studied the modes of reproduction of these organisms noting that some multiplied by fission and others by eggs or spores. These observations were made over two hundred and fifty years ago when Leeuwenhoek's microscope was first being used by scientists. His methods were convincing and his results indisputable. Our modern methods of canning have a marked resemblance. However the old theory of spontaneous generation has since been rehashed many times.

Spallanzani had a great fondness for traveling and while doing so loved to pry into the secrets of nature. Thus his journeys became a means of discovering useful truths. In an excursion to the Apennines he had the satisfaction of proving his theory of the origin of springs. The rebounding of a stone thrown obliquely upon a body of water (the phenomenon of ducks and drakes) he explained by ingenious experiments and calculations as due to a necessary change in its line of direction produced by the cavity which it forms on striking the water. Elasticity of the water had been the common explanation.

In 1768 his essay, "Sopra le reproduzioni animale," appeared and surprised the scientific world. He showed that the reproduction of lost parts could take place in lower animals to an extent previously unrecognized. He confirmed the multiplied regeneration of polyps and the earthworm (Trembley) and discovered that the fresh water worm reproduced itself *ad infinitum*, each part, however it might be divided, becoming a complete animal of its species. Toads, lizards, and salamanders were shown to recover their paws, their tails, and their jawbones, the water snail its horns and the land snail almost all its members.

In consequence of reading Haller's physiology we find his interest aroused to a study of the circulation. He performed many experiments on salamanders in this connection. He also made important observations on the influence of the heart's action upon the arteries and veins and studied the relative velocity of the blood in the larger, medium, and small vessels. This work was translated into English after his death.

Fecundation was considered one of the mysteries of nature and beyond inquiry. Even Magendie said in this regard: . . .

> This is a phenomenon (fecundation) of which it is impossible that our senses should take cognizance. It is one of those mysteries which at present are, and will probably always remain, inexplicable. But we have the experiments of Spallanzani on this subject which have done as much towards removing the difficulty as perhaps can ever be effected.

Spallanzani, constantly seeking the details from which to gain sound basis for conclusions, could not consent that such a biological mystery should go unscratched. With sperm collected from the male he fertilized the ova of frogs. He fertilized a spaniel bitch by injecting into the vagina with a syringe sperm obtained from a dog. He thus expressed his pleasure when the young were born: "I can truly say that I never received greater pleasure on any occasion since I cultivated natural history." It was Leeuwenhoek's view that the sperm "are living miniatures of the animal from which they are derived, exacting only from the female a matrix for nourishment, evolution and growth."[1] Spallanzani maintained that the ova of the female held the miniature of the species, requiring only the stimulus of sperm to excite it into life.

In the summer of 1779 he visited Bonnet at the latter's "delightful villa" at Geneva. He had long wished for the opportunity to know Bonnet personally and enjoy his conversation. While there he became acquainted with Abraham Trembley (1710–1784), the naturalist, occupied with regeneration in hydra. Jean Senebier (1742–1809), Swiss pastor and naturalist, librarian of the republic of Geneva, was also here. Bonnet was studying asexual propagation in aphids, Spallanzani had been interested in artificial fertilization in amphibia. How interesting must have been the story that each had to tell his fellow naturalists! How inspiring must have been the exchange of ideas on biological questions by these masters! Spallanzani cherished his friendship with Bonnet; each submitted the results of his labors to the other before publishing.

It was in Geneva with Bonnet, Senebier, and Trembley as audience and critics that Spallanzani presented his work on digestion, published in 1780 under the title of "Dissertations realtive to the Natural History of Animals and Vegetables." In the introduction to this work he says:

> In the course of my public demonstrations in the year 1777, I repeated in the presence of my hearers those celebrated experiments of the Academy of Cimento (perhaps Redi and Borelli), which show that stomachs of fowls and ducks exert so astonishing a force as to reduce hollow globules of glass to powder in the space of a few hours."

Having confirmed these findings he conceived the idea of extending the observations and applying the method to a study of digestion.

No summary of these dissertations can do them justice. The facts brought out by the experiments may be set down but that strips the work of fine qualities. The philosophic spirit in which it is written together with the discoveries made lend it immortality. To physiologists it is a classic. The author's familiarity with the work of the past century as well as the more recent discoveries of his time cannot be questioned. The findings and opinions of Redi, Valisneri, Magalotti, Pozzi, Boerhaave, and Haller are all carefully considered.

He repeated Réaumur's experiments on gallinaceous birds and showed that trituration was a cooperating factor but not the immediate cause of digestion. He used Réaumur's method of introducing foods to be digested in metalic containers with perforations for entrance of the gastric liquor. Observations were extended to almost every class of animals. He says: "Thus I enjoyed the pleasure of extending my researches to the principal classes of animals, not neglecting man, the noblest and most interesting of all."

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[1] Richerand, A. B. Elements of physiology, London, 1807.

He obtained natural gastric juice by introducing sponges attached to strings into the stomach of various animals. The juice thus obtained was tested for its activity outside the body. The containers were fastened in his axillae to furnish an optimum temperature. Water was always used in one container as a control. He discovered that gastric juice prevents putrefaction, consequently he disproved the idea that digestion was a form of fermentation. He tried to get gastric juice from his own stomach by mechanically inducing vomiting. Some specimens were obtained but the practice was so disagreeable that he could not continue. He says: "I was absolutely incapable of repeating it, notwithstanding my earnest desire to procure more gastric liquor." The action of the gastric juice on all possible kinds of foods, animal and vegetable, bone, etc., was studied. He himself swallowed perforated wooden tubes containing different food substances, later recovering and examining the contents. Thinking that digestion was probably much slower outside the body than in the stomach where possibly the liquor was renewed, he tried repeatedly dropping gastric juice on the substance to be digested and found "solution took place with exceeding speed."

Almost all of the various samples of gastric liquor obtained must have been mixed fluids containing bile and mucus. He describes it as yellowish in color, bitter and salt to the taste, clear and limpid on standing and not inflammable as Réaumur had suggested. Its acidity was ever concealed to him although many times he suspected and tested for acid.[2] He was thus forced to conclude that it was neutral normally, becoming acid perhaps in cases of indigestion where acid is apparently regurgitated, But this acidity he explained as due to fermentation of the contents. To Scopoli, then professor of chemistry at Pavia, he gave a sample for analysis. Thus the first chemical analysis of gastric juice stated:

> The gastric fluid contains, first, pure water; secondly, a saponaceous and gelatinous animal substance; thirdly, sal ammoniac; fourthly, an earthy matter like that which exists in all animal fluids. . . The gastric fluid of the crow precipitates silver from the nitrous acid, and forms luna cornea. This phenomenon might induce us to suppose that common salt exists in the gastric fluid.

Had the specimens been less contaminated, an acidity would certainly have been discovered.

John Hunter criticized this work unjustly. To him Spallanzani was a mere experiment maker who repeated his observations "most unnecessarily." His criticism is rude and without scientific foundation. The facts are not known but perhaps the difference in the general views of the two men may account in part for his attitude. Hunter was an exponent of vitalistic principles; Spallanzani was entirely free from the imaginative factors that for years limited the spirit of investigation. He showed conclusively that gastric fluid is most active when kept at body temperature. Hunter's observations on digestion of the stomach after death led him to believe heat was no factor. In a letter addressed to Caldani at Padua, published in 1788, Spallanzani in a most dignified manner took him to task with an invincible strength of reasoning that threw aside all disguise and left him with no hope of a reply.

Hunter's criticisms may be considered as the expression of a jealous tantrum and not different from his many other fits of anger resulting from an unharnessed temper. Spallanzani's work on digestion is as interesting today as its contributions were valuable at the close of the eighteenth century. He laid down the outlines of digestion, the same that we have today, and only those details have been filled in which the development of chemistry has made possible.

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[2] The discovery of free hydrochloric acid in the gastric juice was made by William Prout in 1824.

Beaumont[3] makes the following statement:

> Suffice it to say, that the theories of concoction, putrefaction, trituration, fermentation and maceration have been prostrated in the dust before the lights of science and the deductions of experiment. It was reserved for Spallanzani to overthrow all these unfounded hypotheses, and to erect upon their ruins a theory which will stand the test of scientific examination and experiment. He established a theory of chemical solution, and taught that chymification was owing to the solvent action of a fluid, secreted by the stomach, and operating as a true menstruum of alimentary substances. To this fluid he gave the name of gastric juice.

An incident is recorded as having taken place in connection with Spallanzani's translation of Bonnet's "The Contemplation of Nature" which illustrates his indisposition to bind philosophy to system. Each professor was required to select a textbook for the use of the students. Spallanzani chose his translation of Bonnet's book. His selection, on being submitted, did not meet with approval in Vienna where biology was taught by system. The professor of natural history at Vienna explained that while he admired the philosophic character of Spallanzani's selection he did not believe it gave the necessary emphasis to nomenclature. Spallanzani was exasperated. His hatred of the systematists he now expressed with the jibe of "nomenclature naturalists."

On request he wrote out an outline of lectures he intended to give on natural history. This outline amounted to a defense of his point of view. The authorities were unyielding. Spallanzani was forced to fall in line on the subject of nomenclature instruction by the bribe of a promised increase in salary.

Early in 1784 he was desirous of making a trip to Turkey and had begun plans for the journey, but he did not succeed readily in getting the proper leave. Meanwhile Valisneri,[4] professor of natural history at Padua, died. Spallanzani was offered his position. He now brought strong pressure upon his institution asking to be relieved of his post saying that the air at Pavia was unsuitable to his health.[5] Vienna at once, "in order to preserve for the university a celebrated person" promised to double his salary and gave him leave to go to Constantinople. He was gone almost a year on this trip, making many interesting observations. He was received by the sultan and on his way home stopped in Vienna to be presented with a gold medal by Joseph II. His reception upon his return illustrates the high regard in which he was held by his students. They met him outside the gates of the city by loud acclaims and escorted him through the streets of Pavia. The following year his students exceeded five hundred in number.

Knowing his popularity with his students, his renown as an investigator, and his prestige with those in power, it is not at all surprising to learn that he "heard the hiss of envy's snakes." A philosopher soaring in the heights of fame is sure to excite the envy or even the hatred of a few of those lesser individuals who cannot get above the first stratum of clouds. The museum at Pavia was under Spallanzani's care. He had taken great pride in it. Its contents were organized by him and by his efforts alone it had flourished. Much of the material had been accumulated through his correspondence and travel. During his absence in Turkey the curator made the discovery that several objects mentioned in the catalogue were not to be found. He knew that Spallanzani had a private museum at his old home, Scandiano. Secretly he visited this and found there, so he maintained, several of the objects belonging to the museum at Pavia. Immediately a scandal of theft was started against Spallanzani. Care was taken to inform all who might be concerned. His associates, Professors Scopoli, Scarpa, and Fontana were drawn into the conspiracy. Various prominent individuals in other universities were informed of the "atrocious" crime of their famous colleague. An inquiry was opened at the royal palace of Milan. Spallanzani succeeded unquestionably in his own defense. Plausible explanations for all the missing objects were given. He was declared innocent. Volta was deprived of the office of curator and sent away from Pavia. Professors Scarpa, Fontana and Scopoli were censured for their attempt to injure the reputation of a fellow professor. Although silence upon those concerned in the scandal was imposed by royal decree, the Abbé could not restrain himself from discharging some piercing shafts at his accusers. Volta was "a bladder full of wind"; Scarpa, "a plagiarist"; Scopoli, "an intestinal worm.

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[3] Physiology of digestion, Plattsburgh, 1833.

[4] Son of Antonio Valisneri (1661–1730).

[5] Cummings states that he enjoyed a "florid state of good health" and such complaints were for diplomatic reasons. The following statement from his "Dissertations" indicates that he may not have been as hardy as he appeared. "Being stronger than common, let no one suppose that my stomach is capable of digesting what that of others cannot digest. I own with concern that it is weak as is usual in those whose pursuits condemn them to a sedentary and unwholesome way of life. My stomach digests food so slowly that I cannot study for five or six hours after a sparing dinner and am liable to indigestion whenever I feed more plentifully than common."

In the summer of 1788 a desire to further enrich the museum at Pavia led him to journey to the Two Sicilies to study the products of Etna, Vesuvius, and other volcanoes. This trip like most of his other travels he says was at his own expense. The report of his trip and findings, Spallanzani's "Travels in the Two Sicilies," makes a good-sized volume. The same diligence and care with which his other work was done he exercised in the examination of lava rock and flowing lava. He describes Messina four and one-half years after it had been laid in ruins by earthquakes. The city was still in the same condition that the earthquakes left it. He pictures the inhabitants as "oppressed and overwhelmed with fears from which they had not yet recovered." He visited Vesuvius while it was erupting. The great heat and fumes made this a dangerous and trying exploration, but he says:

> What experiment can be undertaken perfectly free from inconvenience, and all fear of danger, on mountains that vomit forth fire? I would certainly advise the philosopher who wishes always to make his observations entirely at his ease, and without risk, never to visit volcanoes.

While climbing Etna he was overcome by the volcanic fumes and fatigue. After regaining consciousness, he laboriously climbed to the crater rim and gazed into the cup of the stupendous volcano, feeling entirely repaid for his strenuous efforts. He returned to Pavia richly laden with new materials for the museum. It may be mentioned that among the many distinguished guests whom he had the pleasure of showing through this museum was Joseph II.

During the later years of his life he was deeply engaged in the study of respiration. This work, "Memoirs on Respiration" (1803), was published after his death by his friend, Senebier. It will be remembered that Joseph Black had discovered carbon dioxide in 1753. Priestley had prepared dephlogisticated air in 1772. Lavoisier in 1777 called this air "respirable air or oxygen" and discovered the true nature of the interchange of gases in the lungs. He adopted the theory that the oxidation of carbon and hydrogen takes place in the lungs. Lagrange in 1791 showed the untenability of this hypothesis and concluded that oxidation must take place in the blood. Spallanzani had carefully watched these developments and now it was left to his perspicuity to add the final chapter that is in all essentials our modern conception of respiration. He found that snails and other molluscs in an atmosphere of hydrogen or of nitrogen gave off carbonic acid almost as rapidly as if they had breathed air. Here was proof that the blood gave off, at least for a short time, carbon dioxide even in the absence of oxygen. He showed that many animals absorb oxygen and give off carbon dioxide from the surface of their bodies. He demonstrated that tissues breathe. Stomach, liver, ovaries, etc., when excised, he found to take up oxygen and give off carbon dioxide.[6] By quantitative experiments he proved the effects of activity and temperature upon the respiratory exchange. He was the first to show that the exchange may be influenced by the nature and quantity of food. The seat of respiration was at last made obvious and the study of internal respiration may justly be said to have been founded by these experiments. The imagination cannot conceive a more fitting climax for the life of this great investigator.

How broad his education must have been and how capable he was in the exercise of his mental talents we can readily see from a summary of his many and varied contributions. He distinctly disproved the theory of spontaneous generation which had been done by Redi before the discovery of microscopic organisms had given its exponents a new basis for argument. His work on fertility blazed the trail for future investigators. Mineralogy received distinct contributions from his labors. He was perhaps the first to study the ability of bats to avoid obstacles in flying after they had been blinded. The dissertations on digestion were read in all scientific circles; their contribution to physiology was monumental. The studies on circulation contained original and important observations. By his work on respiration he first showed the real seat of combustion.

Spallanzani was a Fellow of the Royal Society of London and a member of the Academies of Prussia, Stockholm, Göttingen, Turin, Padua and Bologna. His works were read and esteemed in all civilized countries. He lifted the horizon of natural history and extended the boundaries of science. His researches and his eloquence in their presentation, his grasp of philosophy and his magnetism as a teacher gave him a position unapproached among his contemporaries. He possessed the teacher's gift of inspiring his students. Men from every part of Europe came to hear him and went away with a new enthusiasm for science. His lectures were animated and eloquent, embracing the three kingdoms of nature. His European contemporaries were unrestrained in their expressions of tribute to him. Bonnet said he had discovered more truths in five years than all the academies in a half century. "The dying hand of Haller consigned to him the defense of truth and nature." As a huge mountain overshadows the surrounding foothills, so his masterful personality dominated the scientific world in which he lived.

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[6] Magendie could not have been familiar with this work when he published his physiology in 1822. He says: "The lungs, then, are the principal source of animal heat, as was indicated by the trials of Lavoisier and Laplace."

SIR WILLIAM BUTTES OF NORFOLK

THE PHYSICIAN OF HENRY VIII MENTIONED BY SHAKESPEARE

By THOMAS NOXON TOOMEY, M.D.

ST. LOUIS, MO.

To know things hid and barr'd from common sense;
Ay, that is Study's godlike recompense.*

THE grist of the printing press is tinged with little more than the name of Sir William Buttes;† of the man himself, and of the facts of his life and labors, very little is in print. Indeed were he not unique in being the only English physician mentioned by Shakespeare,‡ we would no doubt be able to read of him in only the "Athenae Cantabrigienses" and Munk's "Roll of the Royal College of Physicians of London." Nor has Shakespeare's transmittal of Dr. Buttes' name to posterity helped much, for no student of the Elizabethan drama has been incited to delve into sixteenth century manuscripts for facts concerning Dr. Buttes. The data published by Dr. Munk is practically the only source available to such persons who are not scholars trained in the methods of antiquarian investigation. This breach in medical reliquary came to the notice of the writer when engaged in rereading Shakespeare's dramas of the Tudor cycle and, as he was more curious than sensible of the value of his time, it perforce led him into a quest for the ancient documents that alone held the facts of Dr. Buttes' life. While not all of the circumstances of Dr. Buttes' career can be vouched for by original documentary evidence, at this late day, still enough remains to enable the writer to give a fairly full and exact account of the physician of one of England's most picturesque and influential monarchs.

Sir William Buttes
(1485?–1545)

William Buttes was born in Norwich, county Norfolk, England. He was the scion of "a merchant family of that name which flourished in the city of Norwich during the thirteenth and the two following centuries. Members of the family were repeatedly called upon to represent their fellow citizens in the frequent parliaments of that period. They filled the chief seats of civic dignity and held local offices of trust and importance under the royal commission and were altogether people of great wealth, consideration and influence in those times and places. The last of them who possessed the magistracy there was John Butte, Esq., sheriff in 1456 and mayor in 1462 and 1471. He died in 1475."[37, 38] It seems likely that this Butte was Sir William's paternal great-grandfather. His grandfather seems to have been the William Butte, merchant, who was enrolled as a freeman of Norwich in the eleventh year of Henry VI (1433).[1]

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* Love's Labour's Lost.

† As to the spelling of the name, it should be noted that Sir William, his father before him, and his children after him, almost invariably spelled the name Buttes, though occasionally they used the ancient form Butte. It is spelled the latter or original way on his tomb, in the Annals of the Royal College of Physicians, and in other documents. The form Buttys and the Shakespearean spelling, Butts, were frequently used in the court documents after about 1538.

‡ The medical character in "The Merry Wives of Windsor" was represented to be a French physician, though given the name of a famous English physician, John Kaye (Caius). John Kaye flourished after 1550, or more than a century after the period in which "The Merry Wives of Windsor" was set. There is no good reason to believe that Shakespeare's Dr. Caius portrayed a historical personage.

William was born about the year 1485. His boyhood was spent in St. Peter's parish, Norwich, where the family owned several pieces of city property. One residence was at the end of Saddlegate Street and was joined on two sides by the residence, herbarium and gardens of a famous family of Jewish physicians.[2] This circumstance may have turned young Buttes' thoughts towards medicine and afforded him some early elementary opportunities. In later years, however, his parents, John and Elizabeth[17] Buttes, moved their household to a country estate at Middleton near Lynne, Norfolk. The change of residence was seemingly occasioned by William's father receiving from Henry VIII an extensive grant of fen lands and other country properties in those parts.[18] John Buttes (died, 1529), William's father was at first employed as the auditor of crown revenues in certain large districts of England, but later was also custodian of the estates of wards as well as auditor of revenues.[19]

William was sent as a lad of thirteen or fourteen years to Gonville Hall, University of Cambridge, where he was entered as a pensioner shortly before the year 1500.[3] Gonville Hall was occupied by many lads from Norwich, and at least one other Norwich lad who went to Gonville became a valued member of the medical profession. I refer to John Kaye (Caius).

Buttes took the baccalaureate of arts with the Cambridge class of 1506–07. He stood fourth from the top in a class of twenty-six.[35] Three years later he took the degree of master of arts, and then became a fellow of Gonville Hall. He studied medicine for eight or nine years but whether entirely at Cambridge is not clear. He did not become a doctor of medicine until 1518. Without mentioning the name of the Oxford college concerned, Wood tells us that in 1519 was "a supplicat made that William Butts, doctor of physic, of Cambridge, might be incorporated, but whether he was or not I cannot find."[36]

It is to this period that we must assign his marriage (about 1516) to Margaret, daughter and coheiress of John Bacon of Cambridge.[8] His wife, who was well connected, soon attained a place at Court as a lady in waiting to the daughter of Henry VIII, Princess Mary.[20] Mistress Buttes was the subject of one of Holbein's best portraits. She bore to Dr. Buttes three sons and a daughter.

After taking his medical degree, Dr. Buttes continued to reside in Cambridge, seemingly in the capacity (at least in 1524) of principal of St. Mary's, one of the hostels connected with the university, though probably he was for the most part engaged in teaching medicine.[40] That Dr. Buttes lived in Cambridge as a member of the university and not as a resident of the town is clear from a deed of July 15, 1524, which gave his residence as Middleton.[21] Also it was recorded of him that he was "active in the affairs of the University,"[41] but whether this refers to a later period in his life is not clear.

Through the good offices of his father and the influence of the Duke of Norfolk and other prominent persons who had consulted him,[22] Dr. Buttes obtained patronage at court in the autumn of 1525. His first appointment was as physician to Princess Mary.[14] The date is approximately ascertainable from a letter dated October 14, 1525, by Wolsey to Sir Andrew Windsor "for delivery to Dr. Buttes who is appointed physician to my lady Princess of a livery of blue and green in damask for himself, and in cloth for his two servants; also a cloth livery for the apothecary."[23]

Dr. Buttes was in attendance on members of Henry the Eighth's retinue during the 1528 epidemic of the English sweat (miliary fever). Not only were his services mentioned in letters written by Brian Tuke at the direction of Henry VIII in June, 1528 but the fact of him taking the sweat at Tittinhangar on July 4, 1528 was communicated by Dr. Bell to Cardinal Wolsey.[4] From thence until his death, Dr. Buttes' time seems to have been given almost entirely to the medical care of Henry VIII and members of the regal suite. His professional opinion was evidently much valued, as it was often requested of the king that Dr. Buttes be permitted to travel long distances to attend some knight or noble taken sick away from court. A few of the personages who thus secured his medical care were Roland Lee, Bishop of Coventry and Litchfield who was taken sick at Beaudelay, August 22, 1535; George Earl of Shrewsbury, taken sick on March 12, 1536 and again on January 25, 1537; the Earl of Southampton, December 16, 1538; Lord Russell, July 29, 1538; and Lord Drury on several occasions for a rupture.[25]

The first royal honorarium granted to Dr. Buttes by Henry VIII is recorded in the following warrant on the exchequer:

> Rex omnibus etc. Damus et concedimus dilecto et fideli servienti nostro Willielmo Buttes doctori in medicinis quondam annuitatem quadraginta marcarum ex nunc de maneriis de Acton, Royden et Weston, cum suis pertin. quae nuper fuerunt Henrici Bures defuncti in com. Suffolc. H. R. apud West. in 13 Nov. Reg. XXI (1529) Kennet.[36]
>
> (King by all, etc., we give and concede to our favored and faithful servant, William Buttes, doctor in medicine, the former annuity, forty pounds sterling,* together from now on of the manors of Acton, Royden, and Weston, with their appurtenances, that recently were of Henry Bures deceased in the county of Suffolk. Henry Rex (the royal cipher) given at Westminster the 13th of November (1529) in the year of our reign the twenty-first).

A year later his salary was increased to one hundred pounds per annum, payable quarterly, or two and a half times as much as was paid to Dr. Bentley, the king's surgeon.[26]

Dr. Buttes removed to London in the early part of 1529 and took up residence in Fulham, county Middlesex, but he was always more engaged in following the court than in neighborhood practice. He was admitted a Fellow of the Royal College of Physicians on the ninth of November, 1529, though apparently in his absence, as his admission to fellowship was made temporary and conditional until the College should receive from him the assurance of his support.† This assurance was evidently given as at the time of his death Dr. Buttes was entered in the obituary register of the college. Although his colleagues esteemed him highly, he never filled any collegiate office.[5]

Besides acting in the capacity of physician to Henry VIII, he often acted as an intermediary in receiving and dispatching letters, petitions and other papers.[28] He became a close friend of Cardinal Wolsey, Archbishop Cranmer and Hugh Latimer. He is chiefly remembered for his services to Thomas Cranmer, Archbishop of Canterbury. His rôle in bringing to the king word of Cranmer's ignominious treatment by the lords of the council was worked by Shakespeare into his historical drama on Henry VIII.* Strype, in his life of Cranmer, gives an account of this transaction which is nearly identical with that of Shakespeare. As it is a curious piece of the private history of our subject, I shall quote it in place of the Shakespearean account, which is available to all.

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* For a century or more, forty pounds sterling a year had been the traditional honorarium paid to a physician in ordinary to the king. Its value compared with present day money may best be comprehended by considering that it was ten times as much as was sufficient to keep a student in college, and that it was four times as much as was paid to the royal apothecary; in those days a full time university professor did not receive over twelve pounds a year, or less than one-third as much as was paid to a physician in ordinary to the king. At that time Dr. Thomas Vicary, the surgeon to Henry VIII (and Dr. Bentley, surgeon after Vicary) received only ten pounds sterling per annum.

The perpetual leases on the numerous manors granted to the doctor seem to have netted him at least thirty pounds sterling a year. Furthermore his honorarium was soon increased from forty to one hundred pounds a year. Thus it would seem that Dr. Buttes received at least 130 pounds a year or over thirty-two times as much as would keep one man in bare necessities. Furthermore it was customary for a royal physician to receive numerous private fees from courtiers and casual visitors at the court. Thus it would seem that Dr. Buttes' income while at court was something over fifty thousand dollars a year. Living at court was, however, undoubtedly expensive. Nevertheless, it seems that Dr. Buttes' estate was of such a considerable size that his three sons were able to live in affluence.

† Sed ea Willielmus Butte ea conditione admissus est ut iuret in honorem, perpetuitatem, et observationem statutorum collegii. Per ista tempora solutum est in admissionibus, tantum solidos sex, denarios octo.[5]

> The next morning, according to the king's monition, and his own expectation, the council sent for him (Cranmer) by eight of the clock in the morning. And when he came to the council-chamber door, he was not permitted to enter into the council-chamber, but stood without among serving-men and lacquies above three quarters of an hour; many counsellors and others going in and out. The matter seemed strange unto his secretary, who then attended upon him; which made him slip away to Dr. Butts, to whom he related the manner of the thing. Who by and by came and kept my Lord (Cranmer) company. And yet e're he was called into the council, Dr. Butts went to the king, and told him that he had seen a strange sight. What is that said the king? Marry, said he, my lord of Canterbury is become a lacquey, or a serving-man; for to my knowledge he hath stood among them this hour almost at the council-chamber door. Have they served my lord so?; it is well enough said the king; I shall talk to them by and by.[44]

From this anecdote we may imagine our physician to have been a friend of the reformation, and indeed this is confirmed by various other circumstances.[29] He first, as we are told by Bishop Tanner, invited the celebrated reformer Hugh Latimer to court. He recommended Dr. Thirlby to Cranmer, by whose favor Thirlby afterwards became bishop of Westminister and then of Norwich.[30] The doctor also obtained preferment for a number of others of less importance.[31] Foxe, the martyrologist, and Bishop Parkhurst speak highly in praise of Dr. Buttes.[45] Strype, in his "Life of Sir John Cheke," mentions Dr. Buttes as a favorer of learning and reformation in general, and as the particular patron of Cheke, whom he assisted in his education and his introduction to the world with truly paternal kindness. In return, when he lay ill of the disorder of which he died, Cheke addressed a letter to him full of expressions of gratitude and pious condolence.[46]

Naturally one cannot help but wonder what counsel, if any, the physician of Henry may have given to his king on the occasions of the latter's many love affairs. As a matter of fact we can find but little that passed between the doctor and Bluff Hal on the subject of the latter's women (ladies and others), though to write of Henry VIII without mention of the contrary sex were like rewriting Hamlet without including the Prince of Denmark. Probably Dr. Buttes, in the wealth of his wisdom, sharpened by a clinician's eye, saw that his king was not open to either counsel or the joisting of arguments on such matters. A letter shows that on one occasion (about December 19, 1534) Henry flatly refused to follow the doctor's advice concerning the Princess Mary, the king's daughter. As told to Charles V, Emperor of Austria, by Chapuys, the Emperor's ambassador to the English court:

> The physician advised him (Henry) to send her to the queen her mother where she would be kept at less expense and more honorably and safely for her health, and at least, if anything did happen to her, the king would be freed from all suspicion; to which the king replied that it was quite true but there was one great obstacle, that if he did so there would be no hope of bringing her to do what he wanted, viz. to renounce her lawful and true succession.[32]

The only other extant record touching upon Dr. William and the royal concubinage refers to Henry's marriage to Anne of Cleves.

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* Act V, scene ii.

Henry's betrothal to Anne, daughter of the duke of Cleves, was contracted for political reasons and before Henry had ever laid eyes on her. Anne was huge and phlegmatic and altogether not to the king's taste. When he first saw her he was led to remark, "so they have brought me a Flemish mare." Though the nuptial ceremonials were gone through, the marriage was never consummated, as was testified by Dr. Buttes on July 7, 1540.[33] Two days later, on the basis of the doctor's testimony, the lords spiritual granted Henry a divorce from Anne.

Dr. Buttes' connection with the Royal College of Physicians never led him into intimate participation in the affairs of the College.[5] So singular a dereliction in one so prominently circumstanced must have had a sufficient cause. The cause seems to have been in the fact that Dr. Buttes was more cordially interested in the Guild of Surgeons than in the College of Physicians. Why he took up with the surgeons must also have had a good if not now determinable reason. Whether he was ever really a member of the Guild can not now be stated positively. The Guild before its union with the Company of Barbers was unincorporated and practically without legal organization or status, despite certain concessions made to it by the mayor of London. The Guild was undoubtedly a loose knit association in some particulars. Probably any London medical man of culture, high professional reputation and good social standing (and Buttes had all three) would have been received into the Guild if his society gave promise of a helpful influence. That Dr. Buttes was in a position to help the Guild cannot be gainsaid. But whether he at any time actually sat with the surgeons as a fellow member, must be left an unsettled question, as the minutes of the Guild, if any were kept, are not now known to exist. We have only the fact that he took some part in the affairs of the men of flag and gallipot. He was no doubt a valiant and valuable intercessioner at court for the surgeons, and it is quite likely that the jointure of the liveried and incorporated Company of Barbers with the unincorporated Guild of Surgeons was obtained from parliament through Henry VIII largely as a result of his efforts. The jointure of these associations gave rise to the incorporated Company of Barber Surgeons. The union was authorized by an act of parliament passed on July 12, 1540 and signed by Henry VIII on Sunday, July 24th. The preamble states:

> That the king and parliament duly pondering that it is very needful to provide men expert in the science of physic and chirurgery, for the health of men's bodies when infirmities and sickness shall happen, etc. . . . Yet, forasmuch as within the City of London, where men of great experience, as well in speculation as in practice, of the science and faculty of chirurgery be abiding, there are now two distinct companies exercising chirurgery, one the barbers incorporated, the other the chirurgeons not incorporated, nor having any manner of corporation, which two are necessary to be united. To the intent that by their unity and often assembly together the good and due order, exercise and knowledge of the said science, or faculty of chirurgery, shall, as well in speculation as in practice, by their learning and ripe information, be more perfect. Therefore it is enacted that the barbers and chirurgeons be henceforth united, and as such to enjoy all privileges at any time before granted by the Charter, 1st K. Edw. IV.

These privileges are then confirmed to the united company, and several additional ones are conferred. Thus they are allowed to take the "Bodyes of foure condemned persons yerely for Anatomies," etc. "No manner of person within the City of London, suburbs, and one mile therefrom using any barbery, shall occupy any surgery, letting of blood, or any other thing belonging to surgery except drawing of teeth, nor any practising of surgery shall use any shaving." Power is also given to the four masters to have "the punishment, correction, and management of all defaults and inconveniences amongst the company using barbery and surgery, their authority to extend over freemen and foreighners, aliens and strangers."[39]

It is impossible to ascertain the exact circumstances under which the union was formed, but it is generally believed to have been due to the physicians desiring to have university graduates in medicine placed over the barber surgeons with authority to effect a better practice of surgery by the barbers. The only university graduates who were also thoroughly trained in the surgery of that day were the doctors who had taken university degrees and then followed the English armies or traveled on the Continent and studied under foreign surgeons. These properly trained surgeons had a social and intellectual status nearly equal to that of the physicians. They held themselves aloof from the barber surgeons, who had usually studied under a master barber surgeon only, but they were naturally willing to grasp an opportunity that would enable them to exercise a partial regulatory influence on those whom they considered of inferior ability.

Whatever may have been the cause of bringing the surgeons and the barber surgeons together into a united company, the occasion of the king delivering the charter to the newly incorporated Company of Barber Surgeons gave rise to a celebrated painting by Holbein. This painting shows one of the best extant portraits of Henry viii, and the only known portrait of Dr. Buttes. As the king presented the new charter to the united company at the palace of Bridewell in 1542, and as Holbein died suddenly of the plague in 1543, the date of the portrait of Dr. Buttes can be fairly well determined. Thirteen of the chief worthies in the original picture have their names legibly printed on them in white Roman letters, the work of some barbarian of a later age. It is from this picture that we gain the clue that Dr. Buttes had been a past master of one of the surgical associations prior to 1542. The term master was not employed by the Royal College of Physicians but it was employed by the Company of Barbers. However, the minutes of these organizations clearly indicate that Dr. Buttes never held an office in either of them. Therefore if he had been a past master it must have been in the Guild of Surgeons. No minutes of the Guild are now known to exist. On the other hand it must not be overlooked that the name of Dr. Buttes and the title of past master were painted on Holbein's picture at a date some years after Dr. Buttes' death, and that therefore our would-be informant may have been in error.

Of Dr. Buttes' immediate household it may be noticed that all of his three sons married daughters of Henry Bury of Suffolk, who died just before 1529 and whose manors of Acton, Royden, and Weston were remanded to the Crown and later deeded to Dr. Buttes by Henry viii.[6] As Dr. Buttes' sons were born between 1518 and 1528 (as may be judged from the dates of their entrance into the University of Cambridge) it is likely that Henry Bury's daughters were orphaned at a very tender age. Dr. Buttes provided a home for them on one of his estates when they were made his wards on November 10, 1529 and he was given forty pounds a year out of the Bury estate during the minority of the children.[24]

On July 1, 1536, Henry viii granted to Dr. Buttes a perpetual lease on several valuable manors that had been parts of confiscated abbey lands. The manors were those of Thornege, Brynton, and Great and Little Ryeborough, all in Norfolkshire.[7] The manors brought an annual income of thirty-seven pounds, fifteen shillings, six and three-quarters pence, and one-half farthing, but were subject to fee farm or ground rents payable annually to the Bacon family; the manor of Brynton being subject to five pounds sterling, and the Ryeborough manor to four pounds, seven shillings and one pence.[7, 27] On July 14, 1540 a small part of the Carmelite or White Friar Monastery in London was granted to Dr. Buttes, and in July, 1544 an additional part of the same monastery came into his possession. His only other real property seems to have been Edgefield Manor, which was acquired on

August 29, 1543, and properties at Melton Constable in Norfolk and at Paynington in Suffolk. The house in which he resided at Fulham was the old rectory, which he hired of the rector, the Reverend Doctor Heynes, subsequently one of his executors.

Less than a year before his death Dr. Buttes was knighted by Henry VIII under the style of Sir William Buttes of Norfolk. The date of his equestrian elevation is apparently not of record, but it must have been in the early part of January, 1545 (probably a New Year gift) as the official documents of December, 1544, bore his name with only the title of doctor, whereas after the middle of January, 1545, he was styled Sir William Buttes. He was not the first medical man to receive the accolade, as is commonly supposed, but he was second to receive the honor of knighthood, having been preceded by Sir Thomas Elyot, M.D., some twenty years earlier. However, Sir Thomas was knighted for political service and not for his ability as a physician, so it is fairly certain that Sir William Buttes was the first English physician to attain to knighthood on account of his ability as a physician.

Sir William died at Fulham Manor, the seat that seems ever to have been his principal residence during the years he was physician to the court of Henry VIII. His lingering illness, a "dooble febre quartane," came to an end on November 17, 1545. He was buried on the south side of the south chapel of the chancel of All Saints, the parish church at Fulham. Here his remains rested under an altar bearing a scroll (with the words "Myn advantage") and a bronze effigy of him in full armor.[16] This effigy is probably the only representation of a medical man in plate armor; it shows the belt unbuckled and the scabbard empty, an expression of the noncombatant nature of the bearer's profession. Many years ago this tomb was removed, why and when is not known. In 1627, a collateral descendant, Leonard Buttes of Norfolk, erected to the memory of his distinguished ancestor the memorial tablet which now exists upon the north wall of the nave. This bears the following inscription:

Epitaphium D. Gulielmi Buttii, Equitis Aurati et Medici Regis Henrici Octavi, qui obiit A.D. 1547, 17 Novemb.

Quid Medicina valet, quid honos, quid gratia Regum:
Quid popularis amor, mors ubi saeva venit?
Sola valet pietas quae structa est auspice Christo:
Sola in morte valet, caetera cuncta fluunt.
Ergo mihi in vitâ fuerit quando omnia Christus:
Mors mihi nunc lucum vitaque Christus erit.
(Of what value is medicine, honor, or the gratitude of kings,
Or popular favor, when cruel death comes?
Virtue, under the auspice of Christ, is the foundation of sole worth:
It alone serves in death, all else streams away.
Therefore to me in life Christ had been everything:
Now that I am dead, Christ will be to me refreshment and life.)

Dr. Buttes was very subservient to his king, therefore it is not surprising to find that in his will he goes rather out of his way to describe Henry VIII as the "supreme head on earth of the Church of England and Ireland." After the usual pious exhortations he leaves five pounds sterling for the men who shall carry his body to the grave. To his wife he leaves his "household stuffe," a hundred pounds worth of plate, and the rents of his lands and tenements in Fulham. He mentions a picture of our Saviour on which are the words "Myn advantage," which he greatly valued. This is evidently why these words were inscribed upon his tomb. It will be remembered that Sir William Buttes was a great friend of Archbishop Cranmer, and it is supposed that the archbishop's execution, which did not take place until the reign of Queen Mary, would have taken place in the reign of Henry VIII had it not been for Sir William's intervention. It is not surprising therefore to find "My lord of Canterbury" remembered in his will by an annuity of ten pounds sterling and a present of "one spoone of golde." To his oldest son, William,* who married Jane Bures, he gave the perpetual leasehold of Thornege in Norfolk; to his second son, Thomas, who married Bridget Bures, he gave Ryeborough in Norfolk, and to his youngest son, Edmund, who married Anne Bures, he gave the manor of Burrow in Suffolk.

His seed did not long survive him, however, as not one of his sons left male issue. Ann, the daughter of his youngest son was heiress not only to her father but to both of her uncles. She married Nicholas, eldest son of Sir Nicholas Bacon, lord keeper of the great seal of England.[9]

If Doctor Buttes ever wrote a medical work for public distribution, the work was never published. It is probable that he was never of a mind to write for a public, medical or otherwise. In his day the reading of the medical commonalty was certainly still confined to Celsus and the Greek and Arabic medical writers; Gilbert, Gaddesden, de Chauliac and a few others being the only and rare exceptions. The idea of a native medical literature had barely taken hold.† Under such circumstances it was unlikely that a physician caught in the moil and bustle of court would be attracted to the gentle art of writing. As a matter of fact, Sir William did leave at least one manuscript, a volume of prescriptions and receipts for the use of the royal household. Bound with his collection is a similar one written by Dr. John Chambre, who in the later years of Henry's life was the latter's chief advisor for medical disorders; and a collection by Dr. Walter Cromer; and one by Dr. Augustin de Augustinis, a Venetian and the personal physician of Cardinal Wolsey.[11]

Sir William Buttes' career seems to have been almost an exemplification in the person of one man of the three sources of greatness mentioned by Shakespeare: "Some are born great, some achieve greatness, and some have greatness thrust upon them."*

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* Dr. Buttes' oldest son, William, achieved knighthood (in 1547) for services on the battlefield of Musselburgh. This younger Sir William studied at Cambridge but never took a degree. He was high sheriff of Norfolk and Suffolk in 1562, and representative of Norfolk in the parliament of 1571. He bore azure on a chevron between three estoiles or as many lozenges gules; on a sinister quarter per pale argent and azure, two lion's gambs erased in saltier of the third. Crest: a horse's head sorrel, mane plated of the fourth and gold, on the head a skull plate with two feathers of the second and first.

A simpler Buttes achievement, also from Thornege, and the one from which the younger Sir William differenced his, may be positively identified as Dr. Buttes'. It is gules on a chevron between three estoiles or as many lozenges gules. Crest: a horse's head or carrying a plume of three feathers or and gules, the face and mane covered with armor or, bridled of the last.[40] It is said by Clippingdale that Sir William, upon becoming physician to the king, was granted a second crest, as a royal augmentation, namely a caduceus or held by two hands, the dexter above the sinister.

† Though Gilbert and Richard wrote on medicine in the thirteenth century, and John Gaddesden, John Arderne and John Mirfield wrote somewhat later, the early English medical profession was strikingly unproductive of medical treatises. Even the fifteenth century produced only Nicholas Hostresham, the classical scholars, John Phreas and Thomas Linacre, and Caxton's "The Gouernayle of Helthe; with the medecyne of ye stomacke," London, 1491.

During the first forty-five years of the sixteenth century, or the years in which Dr. Buttes flourished, the following medical works were published: "The Judycyal of Urins," 1512; Thomas Elyot's "Castle of Health," 1534; Thomas Gibson's work on the prophylaxis and treatment of the plague, 1536; "The Treasure" of Poreman, 1540; D. Martin's "Glass of Health," 1540; "The Questyonary of Cyrurgyens," 1541; Thomas Phayre's "The Regiment of Life," whereunto is added a treatise on the pestilence with the "Boke of Children," 1546; and an anatomy in two volumes by William Horman of Salisbury. These works are the only ones of that period now known; it should not, however, be concluded that they were the only ones published during that period, as it is quite possible that all trace has been lost of some of the less important works.

The definitive impetus that launched native English medical literature fell between 1547 and 1552, and was occasioned by the relatively simultaneous appearance of the following five very important original works: Thomas Vicary's "A Treasure for Englishmen, containing the Anatomie of Man's Body," London, 1548; Andrew Boorde's "Breviarie of Health," 1547; William Bullein's "Government of Health," 1548; Caius' "A Boke or Counseill against the Diseasecommonly called The Sweate or Sweatyng Sicknesse," 1552; and William Turner's "New Herball," 1551.

We cannot better close this account of Dr. Buttes than by quoting the following obituary memorial written into the records of the Royal College of Physicians on the occasion of Sir William's death.[42]

Vir gravis; eximiâ literarum cognitione, singulari judicio, summâ experientiâ, et prudenti concilio doctor.

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REFERENCES TO SYPHILIS IN THE PLAYS OF SHAKESPEARE

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THERE are several general references to venereal diseases in the plays of Shakespeare, besides many passages which refer to them directly.

> **Edgar.** The gods are just, and of our pleasant vices
> Make instruments to plague us:[1] . . .

This does not refer to venereal disease but to the illegitimate birth of Edgar, although it is very frequently used as a quotation applicable to diseases arising from vicious habits.

In "As You Like It,"[2] the duke tells Jacques that his sermonizing is but the result of the libertine life he, Jacques, has led in his youth:

> **Duke.** Most mischievous foul sin, in chiding sin:
> For thou thyself hast been a libertine,
> As sensual as the brutish sting itself;
> And all the embossèd sores, and headed evils
> That thou with license of free foot hast caught,
> Wouldst thou disgorge into the general world.

Adam[3] is supposed to refer to his chastity in youth when speaking of the means whereby he attained a lusty old age:

> **Adam.** Though I look old, yet I am strong and lusty;
> For in my youth I never did apply
> Hot and rebellious liquors in my blood;
> Nor did not with unbashful forehead woo
> The means of weakness and debility;
> Therefore my age is as a lusty winter,
> Frosty, but kindly.

"Timon of Athens" is especially replete with details bearing on syphilis in all its stages, primary, secondary, and tertiary, showing that Shakespeare clearly understood the different phases of the disease and their various manifestations. In many passages in other plays he shows a quite remarkable insight into the complaint.

There is much obscurity as to the origin of syphilis on the continent of Europe. Its first historic appearance was at the siege of Naples by the French under Charles viii, in 1495, when it broke out in epidemic form in the French camp. The French attributed the outbreak to contagion from the Spanish living in Naples. The latter were said to have acquired the disease in their native country whither it had been brought by sailors with Columbus returning from his first voyage to America. That some form of syphilis existed in Europe previous to that time is, however, highly probable. It is likely that much of the so-called leprosy so prevalent in European countries prior to the recognition of syphilis was of a syphilitic nature.

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[1] King Lear, v, iii, 193–194.

[2] ii, vii, 65–70.

[3] As You Like It, ii, iii, 47–53.

Professor Sudhoff has published a number of facsimiles of documents printed about the end of the fifteenth century which show that the disease was then well recognized and he inclines to the belief that such recognition antedates considerably the voyage of Columbus.

When its origin, its gravity and its frequency had become recognized every nation sought to attach the blame for its introduction into the world on some other. Until the publication of Sudhoff's monographs[4] the fact that syphilis was more generally known by the name "French disease" than by any other, led to the belief that this was because it had been spread by the French soldiers after their return from Naples. But Sudhoff has found prescriptions and directions for the treatment of what he considers must have been syphilis, antedating the siege of Naples by many years, and in some of them the disease is distinctly spoken of as "the French disease." Shakespeare uses this term on several occasions.

PISTOL. News have I, that my Nell is dead i' the
spital
Of malady of France;[5] . . .

One of the most conspicuous symptoms of the disease, the corona Veneris, was made by Shakespeare the subject of several jests in which the French origin of the disease is indicated by terming this eruption on the forehead "the French crown." Thus the clown in "All's Well that Ends Well,"[6] answers the countess in a manner which would now be considered very improper, although at that time the mention of such matters in public was not regarded as at all unseemly:

COUNTESS. Will your answer serve fit to all questions?
CLOWN. As fit as ten groats is for the hand of an attorney, as your French crown for your taffeta punk.

In "A Midsummer-Night's Dream,"[7] the players jest on the loss of hair (alopecia) which occurs in syphilis and is frequently associated with the corona Veneris. Bottom expresses his willingness to play the part of Pyramus:

BOTTOM. I will discharge it in either your straw-colour beard, your orange-tawney beard, your purple-in-grain beard, or your French-crown-colour beard, your perfect yellow.
QUINCE. Some of your French crowns have no hair at all, and then you will play bare-faced.

The clown Costard in "Love's Labour's Lost"[8] quibbles on the French crown as follows:

COSTARD. . . . Remuneration, why, it is a fairer name than French crown. I will never buy and sell out of this word.

In the brothel at Mitylene,[9] when Boult and the bawd are discussing a former customer, a Frenchman, we find the following punning reference:

BAWD. Well, well; as for him, he brought his disease hither: here he does but repair it. I know, he will come in our shadow, to scatter his crowns in the sun.

In the following dialogue[10] reference is made to the contagious nature of syphilis in Lucio's refusal to drink out of a vessel previously used by a syphilitic:

LUCIO. I will, out of thine own confession, learn to begin thy health; but, whilst I live, forget to drink after thee.
FIRST GENTL. I think I have done myself wrong, have I not?
SECOND GENTL. Yes, that thou hast, whether thou art tainted or free.
LUCIO. Behold, behold, where Madame Mitigation comes!
FIRST GENTL. I have purchased as many diseases under her roof as come to—

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[4] Graphische und typographische Erstlinge der Syphilis-literature; and Aus der Frühgeschichte der Syphilis, 1912.

[5] Henry v. v, i, 86–87.

[6] II, ii, 20–24.

[7] I, ii, 94–99.

[8] III, i, 145–148.

[9] Pericles. IV, iii, 119–122.

[10] Measure for Measure, I ii, 38–62.

Second Gentl. To what, I pray?
Lucio. Judge.
Second Gentl. To three thousand dolours a year.
First Gentl. Ay, and more.
Lucio. A French crown more.
First Gentl. Thou art always figuring diseases in me; but thou art full of error; I am sound.
Lucio. Nay, not as one would say, healthy; but so sound as things that are hollow: thy bones are hollow; impiety has made a feast of thee.
Enter Mistress Overdone.
First Gentl. How now? Which of your hips has the most profound sciatica?

The "hollow bones" and the "profound sciatica" are both allusions to the tertiary symptoms of syphilis.

Ben Johnson in "Every Man Out of His Humour"[11] also refers to syphilis as the French pox.

Carlo Buffone. Ay, do you make a wonder on't? Why it's your only physic. Let a man sweat once a week in a hot house, and be well rubbed and frotted, with a good, plump, juicy wench, and sweet linen, he shall ne'er have the pox.
Pontavarlo. What the French pox?
Carlo Buffone. The French pox! Our pox: s'blood we have here as good form as they man, what?

Thersites[12] speaks of syphilis as the Neapolitan disease:

Thersites. After this, the vengeance on the whole camp! or rather, the Neapolitan boneache, for that, methinks, is the curse dependent on those that war for a placket.

Thersites also refers to a symptom that was very generally known as a symptom of syphilis:

Thersites. Now the dry serpigo on the subject, and war and lechery confound all![13]

The contraction of syphilis from professional prostitutes is a matter of frequent allusion:

Mariana. For me,
That am a maid, though most ungentle fortune
Hath placed me in this sty, where, since I came,
Diseases have been sold dearer than physic.[14]

And in "King Henry iv":[15]

Falstaff. If the cook help to make the gluttony, you help to make the diseases, Doll; we catch of you, Doll, we catch of you; grant that, my poor virtue, grant that.

The freedom of speech in polite circles on the subject of syphilis is curiously illustrated when Iachimo, who is supposed to be a man of polished manners, although a villain, speaks in the following passage[16] to Imogen, the perfect picture of a pure highminded lady. He is trying to deceive her into the belief that her loved Posthumus has forgotten her in the pleasures of a licentious life in Rome.

Iachimo. With diseased ventures
That play for gold with all infirmities,
Which rottenness can lend nature! Such boiled stuff
As well might poison poison.

The name pox as applied to syphilis must have come into use in England at an early period after the introduction of the disease into that country, which is supposed to have been in 1496. The term was frequently used in cursing.

Trinculo. A pox o' your bottle! this can sack and drinking do.[17]

Timon of Athens in his terrible adjuration of the mistress of Alcibiades[18] uses the epithet most appropriately:

Timon. Be whores still;
And he whose pious breath seeks to convert you,
Be strong in whore, allure him, burn him up;
Let your close fire predominate his smoke,
And be no turncoats. Yet may your pains, six months
Be quite contrary. Thatch your poor thin roofs
With burdens of the dead: some that were hanged,
No matter: wear them, betray with them. Whore still;
Paint till a horse may mire upon your face.
A pox of wrinkles!

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[11] iv, ii.
[12] Troilus and Cressida. ii, iii, 235–238.
[13] ii, iii, 80–82.
[14] Pericles. iv, vi, 92–95.
[15] Part ii. ii, iv, 48–51.
[16] Cymbeline. i, vi, 140–143.
[17] Tempest. iii, ii, 86–88.
[18] Timon of Athens. iv, iii, 156–165.

In other plays the word is often found in this use.

KATHERINE. A pox of that jest! and I beshrew all shrews![19]

FALSTAFF. A pox of this gout! or, a gout of this pox![20]

PANDOUR. Now, the pox upon her green-sickness for me.[21]

For a brief poetical description of the physical evils wrought by syphilis, there is nothing comparable with that uttered by Timon of Athens[22] when he is urging the two mistresses of Alcibiades to go forth and ply the trade of prostitution to the destruction of men:

TIMON. Consumptions sow
In hollow bones of man! strike their sharp shins,
And mar men's spurring. Crack the lawyer's voice,
That he may never more false title plead,
Nor sound his quillets shrilly: hoar the flamen,
That scolds against the quality of flesh
And not believes himself: down with the nose,
Down with it flat; take the bridge quite away
Of him that, his particular to forsee,
Smells from the general weal: make curled-pate ruffians bald;
And let the unscarred braggarts of the war
Derive some pain from you: Plague all,
That your activity may defeat and quell
The source of all erection. There's more gold:
Do you damn others, and let this damn you,
And ditches grave you all!

Bucknill[23] believes that the term "hollow bones" alludes to those of the cranium, but I think, taken in conjunction with the shins, it more probably refers to the syphilitic manifestations which are so frequent in the bones of the leg, so commonly associated with osteocopic pains and intractable leg ulcers. The raucous voice of the victim of laryngeal syphilis is familiar to all medical men. Syphilitic destruction of the nasal septum is so common a result of the disease that it is frequently referred to in lay as well as medical literature. The falling out of the hair is a symptom commonly witnessed and generally known. Impotency is not so frequently a result of syphilis but does occasionally occur because of it.

Timon of Athens refers to the hospitals in which syphilitics were treated in the following passage,[24] in the course of his discourse on the power of gold:

TIMON. This is it
That makes the wappened widow wed again;
She whom the spital-house and ulcerous sores
Would cast the gorge at, this embalms and spices
To the April day again.

There were establishments in which special treatment was given to syphilitics and though "spital" is quite obviously an abbreviation of the word hospital, nevertheless in popular use "spital" seems to have been frequently applied to places in which treatment by fumigations, baths and inunctions was given to victims of syphilis. Mercury was used in the treatment, and as its use was but poorly understood by many of the empirics, who then as now devoted themselves especially to the treatment of syphilis, it is possible that the frequent salivation from the abuse of mercury had something to do with the application of the name. When Pistol is quarreling with Nym[25] he tells the latter that he intends to marry Dame Quickly, and bids him go to the spital:

PISTOL. No; to the spital go,
And from the powdering-tub of infamy
Fetch forth the lazar kite of Cressid's kind.

Pistol uses the term again in a passage[26] already quoted:

PISTOL. News have I, that my Nell is dead i' the spital
Of malady of France;

It is possible that sometimes these spitals were in reality merely houses of prostitution into which syphilitics retired to conceal themselves while undergoing treatment. Ben Johnson in the characters of the persons in "Every Man Out of His Humour," describing Shift says: "All the while he was taking the diet in a bawdy house."

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[19] Love's Labour's Lost. v, ii, 50.

[20] Henry IV, Part II. I, ii, 73.

[21] Pericles. IV, vi, 12.

[22] Timon of Athens. IV. iii. 168–183.

[23] Bucknill. Medical knowledge of Shakespeare, Longman, London, 1860.

[24] *Op. cit.* IV, iii, 38–42.

[25] Henry V. II, i, 78–80.

[26] *Op. cit.* V, i, 86–87.

The powdering tub is frequently referred to as one of the means of administering mercury. This practise is mentioned when Lucio is talking[27] to the clown about the bawd who was his mistress:

Lucio. Procures she still, ha?
Clown. Troth, sir, she hath eaten up all her beef, and she is herself in the tub.

Timon of Athens[28] adjures the whores to give men syphilis:

Timon. Give them diseases, leaving with thee their lust.
For tubs and baths: bring down rose-cheekéd youth
To the tub-fast and the diet.

The treatment consisted of fumigation, the patient being placed in a tub and cinnabar thrown on a hot dish in it. The mercury thus volatilized deposited on the surface of the body. This sweating by means of hot tubs or baths and a regular dieting were two of the therapeutic measures in the treatment of syphilis. Pandarus refers to the sweating treatment in the following passage:[29]

Pandarus. My fear is this.
Some galled goose of Winchester would hiss.
Till then I'll sweat and seek about for eases;
And at that time bequeath you my diseases.

This quotation also refers to the fact that the public brothels of London used to be licensed under a privilege granted to the bishop of Winchester. Such licensing continued until 1547 when it was ordered abolished. This practice is alluded to again in the first part of "Henry vi"[30] when the Duke of Gloucester is quarreling with the Bishop of Winchester at the gates of the Tower of London. Gloucester taunts his priestly antagonist:

Gloucester. Thou that giv'st whores indulgences to sin.

And again when rallying his men to fight against the Bishop.

Gloucester. Winchester goose! I cry, a rope! a rope!
Now beat them hence; why do you let them stay?
Thee I'll chase hence, thou wolf in sheep's array.
Out tawney coats! Out, scarlet hypocrite!

The appearance of those who had undergone treatment with mercurial fumigations and inunctions is alluded to by Rabelais in the prologue to "Pantagruel," Book ii, when he is speaking of the comfort afforded those afflicted with syphilis or gout by the perusal of his books:

> But what shall I say of those poor men that are plagued with the pox and the gout? O, how often have we seen them, even immediately after they were anointed and thoroughly greased, till their faces did glister like the keyhole of a powdering tub, their teeth dance like the jacks of a pair of little organs or virginals, when they are played upon, and that they foamed from their very throats like a boar, which the mongrel mastiffs have drivén in, and overthrown among the toils.

Ben Johnson also refers to the aspect of those who have just been fumigated:

Pontavarlo. Methinks Carlo you look very smooth.
Carlo Buffone. Why I come but now from a hot-house, I needs must look smooth.[31]

Diet also played a very important part in the treatment:

Clown. Why very well; I telling you then, if you be remembered, that such a one, and such a one, were past cure of the thing you wot of, unless they kept very good diet as I told you.[32]

Timon recognized distinctly the contagiousness of syphilitic lesions and that the disease might be conveyed by contact other than during sexual intercourse. This is shown in his conversation with one of the mistresses of Alcibiades:[33]

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[27] Measure for Measure. ii, ii, 51–53.
[28] Timon of Athens. iv, iii, 90–92.
[29] Troilus and Cressida. v, x, 56–58.
[30] i, iii, 35, 54–57.
[31] Every Man Out of His Humour.
[32] Measure for Measure. ii, i, 113–116.
[33] Timon of Athens. iv, iii, 66–68.

PHRYNIA. Thy lips rot off!
TIMON. I will not kiss thee; then the rot returns
To thine own lips again.

In the following passage[34] Bucknill thinks the word leprosy should be interpreted as meaning a syphilitic condition:

TIMON. Would thou wert clean enough to spit upon.
APEMANTUS. A plague on thee! thou art too bad to curse.
TIMON. All villains that do stand by thee are pure.
APEMANTUS. There is no leprosy but what thou speaks't.
TIMON. If I name thee,
I'll beat thee, but I should infect my hands.
APEMANTUS. I would my tongue could rot them off!

Bucknill makes a curious error[35] when he states, "in Shakespeare's time the secondary forms of syphilis were erroneously thought to be contagious in the highest degree," and he quotes the following dialogue written by Erasmus, and quoted by Astruc, as an instance of this erroneous opinion:

G.A. But you forget this evil is propagated many different ways besides that of copulation, as by kissing, talking together, touching each other, drinking together. For such is the spiteful nature thereof, that it is never better pleased than when it can spread its poison to others without advantaging itself.

P.E. If it be thus let no one suffer his barber to come near him to mow down his beard; or for safety let every man shave himself.

G.A. But if, by way of security, what if each of them were to keep his lips close, and not speak a word till the barber is done and is gone about his business?

P.E. That would do because the infection may be taken in by the nostrils.

G.A. I have a remedy for that.

P.E. Pray what?

G.A. To do as the chemists, wear a mask with glass eyes that may let in the light, and a tube also that may be fastened under the arms, by which the air may pass to and from the mouth and nostrils.

P.E. This is well enough if we had nothing to fear from the touch of his fingers, from his linen, and from his comb and scissors.

According to modern views Erasmus was quite right in his supposition that there was danger from a syphilitic barber.

The dangers of syphilis when not taken in hand and treated are indicated in the following speech:[36]

KING. But so much was our love,
We would not understand what was most fit:
But like the owner of a foul disease,
To keep it from divulging, let it feed
Even on the pith of life.

An old English term for venereal sores is used by King Lear[37] when trying to console Cordelia:

LEAR. Wipe thine eyes;
The goujeers shall devour them, flesh and fell,
Ere they shall make us weep:

Timon refers to rupial eruption of syphilis in the following passage:[38]

TIMON. Of man and beast the infinite malady
Crust you quite o'er!

Timon might seem to imply in the above that syphilis was a disease of the lower animals as well as of man.

That syphilis was very prevalent in England is evidenced by the remarks of one of the clowns in the grave digging scene in "Hamlet."[39]

HAMLET. How long will a man lie i' th' earth ere he rot?
FIRST CLOWN. I' faith if he be not rotten before he die, as we have many pocky corses now-a-days, that will scarce hold the laying in; he will last you some eight year or nine year.

Bucknill[40] sees in the following speech of Jacques a reference to syphilis, stating that "When Jacques expresses in medical form of thought and phrase his desire to reform the moral evils of the world, the class of disease to which the half technical phrase of 'cleansing the foul body' appears to refer to, is that which by its novelty and prevalence engrossed so much attention at that time."

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[34] *Op. cit.* IV, iii, 365–376.
[35] Bucknill. *Op. cit.*, 257.
[36] Hamlet. IV, i, 20–24.
[37] King Lear. V, iii, 25–28.
[38] Timon of Athens. III, vi, 107–108.
[39] V, i, 178–184.
[40] *Op. cit.*, p. 108.

Bucknill thinks that the "embossed sores and headed evils" refer to the rupial eruption of syphilis. It is curious that in his note in the variorum edition, Dr. Furness makes no reference to this interpretation and that none of the numerous commentators he quotes consider the passage in this bearing.

JACQUES. Invest me in my motley, give me leave
To speak my mind, and I will through and through
Cleanse the foul body of the infected world,
If they will patiently receive my medicine.
DUKE, SENIOR. Fie on thee! I can tell what thou wouldst do.
JACQUES. What, for a counter, would I do but good?
DUKE, SENIOR. Most mischievous foul sin, in chiding sin:
For thou thyself hast been a libertine,
As sensual as the brutish sting itself;
And all the embossèd sores, and headed evils,
That thou with license of free foot hast caught,
Wouldst thou disgorge into the general world.[41]

[41] As You Like It. II, vii, 59–70.

JAMES ATKINSON AND HIS MEDICAL BIBLIOGRAPHY*

By JOHN RUHRÄH, M.D.

BALTIMORE, MD.

LET no man think he would be buying a dull book if Dame Fortune should smile upon him and throw in his way that most remarkable of all medical bibliographies, which James Atkinson compiled under the index letters A and B. He got no farther in the alphabet. In fact I do not think he ever had any intention of attempting more. He made his string of authors and titles serve as a frame for some of the most amusing comments ever made apropos of the dry-as-dust authors he considered. He says of himself and his writings:

> I am not the sort of fellow to undertake to write a sentimental journey; and, therefore, wanting better amusement, and through mere incident, I stumbled upon the dry, dusty, tedious, accursed, hateful, bibliography. It may, perchance, mollify duller than ordinary hours. It may kill time more circuitously, than in a direct manslaughtering way. And in a degree, which, if enforced, would kill the devil. But of profit, it is seldom productive. Should only one reader, even a destitute Unitarian, upon the occasion, honour my pages with his patience; this patience may inform him, and to his cost he would learn, how much or how little of this virtue may be required to effect the smallest impression upon a legitimate rock of literary granite: in distinction, to the task of his patience, in wading through the alluvium of my nonsense. And yet unless his instrument or perforator be smeared with a drop or two of the balsam of nonsense, he may labour through his days, and labour through his nights, but will never drill through the impenetrable medium of a dense and dolorous cloud of bibliography. He must at length be contented in concluding with me that bibliography is a doleful ditty. Or as Lambinet has it, "on ne peut se dissimuler que le plupart des ouvrages bibliographiques ne soient d'une sécheresse soporifique," (snort and echo) *soporifique!*

He was a great fellow, a friend of Sterne (whose style he has unconsciously imitated) and I imagine a thoroughly delightful man whom I have taken so to heart on short acquaintance that I shall find it hard work to return the volume which I should like to place next to my "Tristram Shandy" and my "Sentimental Journey." Perhaps some day Dame Fortune may smile upon me.

Why this work has never been reprinted is a mystery to me. Dr. Osler said it was the most fascinating book on the subject ever written. I know of no book more amusing, excepting always "Tristram Shandy." If you

*Published in 1834.

like Sterne you will like Atkinson; if you do not like Sterne you will not like Atkinson. As I like Sterne immensely I would undertake the task of editing a new edition could an enterprising publisher be found. Trimmed of the bibliographic references and with some omissions in the text, the book would not be unwieldy and I believe its publishing would be fraught with little danger of financial loss.

Atkinson was the son of a physician of York. He himself was the most successful practitioner there for a score of years and from the title page of his book we learn that he was "Surgeon of H.R.H., the late Duke of York; Senior Surgeon to the York County Hospital, and the York Dispensary." Later Atkinson is mentioned in *Notes and Queries*[1] and in Dibdins' "Bibliographical Tour."

Of his life we know little though doubtless considerable biographical material could be unearthed in York. He was respectable and respected and when he died in 1839 the *York Herald* spoke of him in glowing terms which might have served as a recommendation to St. Peter as it were. Part of this reads as follows: "Ever prominent with his aid at every benevolent institution, he possessed the blessing of the poor and afflicted whilst among them, and will live in their grateful remembrance beyond the grave." He was Vice-President of the Yorkshire Philosophical Society, an enthusiastic member of the Musical Society and possessed a fine talent for drawing. No less than eight portraits by him hang in the National Portrait Gallery.

Atkinson had a curiously facile gift of expression and as one reads his work old friends turn up again. The very first sentence in the Preface was a favorite saying of Osler. Let me quote part of the Preface:

> There is not perhaps any man so good a judge of the difficulty of writing a book, as an actual author. He soon discovers how many qualifications are necessary, how much science is required, and which are the points of most difficult access. He soon finds out his own deficiencies; and, as regards his powers, that some difficulties may be insurmountable. That essay, which sometimes originates in study and amusement gets insensibly into growth, and is perpetuated. For, having been undertaken in the spirit of an inquirer, it is frequently carried on in the capacity of a student. This student, however, soon assumes the master, and pronounces his decisions on critical subjects, as authoritatively as if all learning and languages were at his fingers ends. . . .
>
> In this sense Bibliomania, in lieu of preserving the use of books, has deprived us of them. Even the little giant Dib- (I dare not draw him at length), can scarcely prevent it. How many vagabond heirs to libraries have sold their books by the pound weight (though not sterling), to the grocer or pastry-cook. So lamentable to behold! a slushy cook subjecting poor Pliny, in his best condition, again to be burned to ashes, in singeing a pig! and beneath him the divine Homer (ah che gusto!) blazing in the dripping pan, and singeing a goose! Yet he is there, crackling with fire, his wonted fire; which this adept and greasy cook cannot for her life extinguish. Let us then, as we are often desired, just again deplore the fate of the Alexandrian Library in the stews, the literary devastations of the Goths and Vandals, the horrible sacrileges of the French Revolution; of that very nation, where books and bibliography are now in splendour. And also, of those places, where all the fine libraries have been sacked and ransacked, where beautiful editions have been polluted and destroyed, in nocturnal orgies. . . .
>
> Meditating on these sad obstructions to the propagation of literature, may we not therefore at least hold praiseworthy any attempt, from any man, to restore, if possible, the spirit and well being even of a monotonous bibliography?
>
> For the endless imperfections of my work, I have a feeble excuse. It is a corseless exuvium, irregularly collected, by bits and scraps of leisure and pleasure, from the indispensable occupations of a medical man; who, like some others, is in the actual enjoyment of all the horrors and irritations of three separate professional departments. . . .
>
> The reader must not, in common mercy, call upon me to decypher all the enigmatous letters, and initials, in this book. He must make allow-

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[1] Ser. 5, x, 474.

> ance for the critiques I have delivered. They are too free, too flippant, too loose. I am afraid their counter-parts will be too strict, too prudential, too tight. But, being (*nescio quo fato*) an admirer of the wildness and play of animals in a state of nature (not as in *museo nostro*, like skeletons), I doubt that I have exhibited, in my own pages, too much also of the frolics and gambols of a native folly. I pray you, gentlest of all gentle readers, to forgive me; and if there unfortunately be a magazine of fulminating powder in the criticising cells of your *os petrosum*, don't use a percussion lock or hair trigger; don't let it burst suddenly upon me; for I am of a nervous, quiet, and peaceable, though ridiculous nature; and far advanced in life. And you will have no credit in killing so harmless a creature.
>
> But, independent of my various errata, omissions, and mis-interpretations (all of which, however, I shall palm upon the printer) what excuse can I offer, or what plea can I make, for having, firstly, plucked other authors of their most brilliant and gaudy feathers: and secondly, for strutting about with them, in alto relievo, as my own? Still farther, what amends can I venture, for that sad lack of gravity (no, not of decorum) which here and there, and everywhere, is so apparent in the most serious pages?
>
> I must request an *arant propos*, and once for all the reader to observe, that, lest he should get suddenly bogged in the mire of my expressions and absurdities, I shall (as is done in other disagreeable, difficult, and dirty roads) desire the traveller "to take off and put on," as he has seen on a mile post. To take off when the road becomes ridiculous and precipitous; and to put on when it is steady and accessible. So that it will take off all blame from me, should he put on when he is advised to take off; and all blame must be put on him, if he does put on, when he should take off. And let him now observe, that, by take off, I intend him to take his eyes off the page; and, by put on, I advise him to replace them. To avoid repetition, however, of this notice, I must require of him, when he perceives the morality of my pages, or jet of terms, to be rather equivocal; to scance through his fingers only at them, like a good and virtuous young woman, criticising and overhawling a rake.
>
> Finally, I know there are men who wilfully pervert all meaning. So that, by take off, a man would affect to understand, that he was instantly to take off, full gallop up the hill; and by put on, to stick spurs into his horse as if the deuce drove him down it. To this, testy traveller, I have nothing to say; I only wish to apprize the reader, that if he choose to read my non-sense, with his eyes and fingers open, he must be a greater fool, if possible, than the author who wrote it.
>
> Nor do I affect to assert, that my work is at all calculated for *Somnambules* in Bibliography.

The book of which I write and from which I shall quote extensively is a single volume, not too large to be held easily and can be read in two evenings, if perforce it must be done so rapidly. Such a method with such a book is much like drinking a bottle of Scotch liqueur at two sittings, rather too stimulating but one would do it were it to be taken away the third night, at least we unregenerate ones who scoff at Volstead would. The book has a motto: "Take me for better, for worse; for richer, for poorer," and is dedicated "To all idle medical students in Great Britain." Then follows the word "Sit" and a drawing of that part of the skeleton known as the sacrum. This puzzled me until I remembered what an inveterate punster our author was. In his short article, "Bibliographical References," included in the volume at hand, he says:

> For my part, although my sacrum and crista Ilei are no harder, or become more cartilaginized by book-incubation and study than my neighbors, yet I have known the time when a very thin old black-lettered book has made my dull bones ache most confoundly; and after all, to very little purpose, and much less entertainment. And I should, out of mere curiosity, like much (in due, very due, time) to possess Mr. Dibdin's Ossa Ischii, for my museum, as a vermin specimen of a literary incubator. By this sort of industry, however, we are taught to understand, that the duties of a critic, even to a competent sitter, are not so easily accomplished as "le moyen de faire éclore"; or, by hatching fresh eggs in a graduated oven.

Is it not delightful? I should like to have a portrait of the fellow to see what manner of man he was. Of this subject of portraits he says in his conclusion:

> Having accomplished an imperfect, dry, and verbose Bibliography; it occurred to me, during the progress, that an illustration of Authors by their Portraits, as is frequently done, might be an useful and pleasing addition.
>
> In consequence, I have, for many years, collected Portraits of Medical Authors generally. And I have felt great satisfaction and instruction in confronting their works, their lives, and their faces. Caste of features, of thought, and expression, sometimes, though rarely, coincide. Whenever, however, it does happen, the coincidence and gratification are synonymous. Occasionally, also, as an amusement, I have sketched brief notices of the Medical and Literary History of those authors, after the example of other Biographers. So that when prosing over the heavy drag of some of those writers, and their editions, a mere glance at their portraits has occasionally awakened and delighted me: discovering, possibly, in their countenances traces of intellect which I did not see before, nor otherwise should have seen. Therefore I invite the student to follow me in this mode of interpretation; to collect and to arrange; to contemplate the man specifically in his mind; and that same man in his portrait.
>
> Whether I may be induced, in future, for the advantage of the young collector, to publish, after the manner of Granger, a partial catalogue of the different heads and portraits I possess; their respective eras; the number and variety of the same; and the names of the painters and engravers, as far as I know, may depend on circumstances. For I own; that frequently I am out of love with everything I undertake. And am not unapt, by virtue of long living, to fall into that despondency and unchristian-like opinion; that the world is a naughty jade not worth serving!

Atkinson starts off with Aristotle and then goes on alphabetically through the A's and B's. Of course one does not turn to Atkinson for scientific bibliography, which others have done much better; one goes to him to be amused, for witty chitchat about those authors and their works included under A and B and others that are not ordinarily thus classified. For he gives a list of "a few respectable authors on theory and physiology, indiscriminately noticed," which comprises about a hundred names, some well known, some familiar only to medical bibliomaniacs.

With Aristotle we shall tarry only long enough to snatch a couple of quotations; the first concerning a typographical error in one of the editions:

> In one of the proof sheets, by a *lusus naturae* (I fear) the printer's devil, to show off his Latin, as the dying spark and refuse of a free school, and as a trick upon the compositor, had slyly exchanged the word *castigationes* into *castrationes*, the extremity of wit and wickedness; but what a difference to poor Averroës.
>
> Combien d' éditions annoncées plusieurs fois par les bibliographes, qui se copient trop souvent sans examen, seroient reconnues fausses, si l'on remontait aux premiers auteurs qui les ont citées! Malheureusement comme on n' ont pas toujours à portée de faire les vérifications nécessaires pour découvrir la source de l'erreur, il est quelque fois impossible de s'en préserver. (Brunet.)

Some idea of Atkinson's sense of humor can be gained by his comments upon himself as a linguist, and on the Greek language. In his preface what he says of the German language, of which he professed ignorance, would have satisfied even the most exacting American during the late war.

Of Asclepiades, of Prusa in Bithynia, who, it appears, lived about 120 B.C., he says:

> For an account of this particular author consult Coelius Aurelianus, and Celsus. There were several others of like name mentioned by Galen. He was, by report, a wild erratic, vagabond son of physic, but a talented man. Fragments of his works and genius are recorded by the above authors. He derided, and lived without physic, I mean, without taking it, to the age of eighty. Wonderful!
>
> In some respects I doubt, Avicenna had chosen him for a pattern. He prescribed wine for himself, and for his patients, something to excess. Pliny relates that he died from a fall. Of him says the comical poet:
>
> Wherefore to cure all his bruises and knocks,
> He was used to drink *vinum* orthodox;
> And one day did it so effectually,
> He dislocated his epistrophe.

Atkinson must have been a collector of considerable ability even if his taste ran largely to several of the early printers. He pokes fun at the collectors who never read their books, a goodly crew even today.

> I am sorry to observe that in my Aldus' edition, of 1518, the book-worm has taken care not to indulge much, either in sleep or dreams. For he has made some very intrusive perforations. And I wonder, in what part of this book-worm's head, the most ingenious philosophers, the Craniologist, would affect to look for the organ of destructiveness. If all collectors of books were not more to blame than the book-worm, the worm would never have been there. Of all creatures, he is the most peaceable and retired. And nothing in life he detests so much, or is so fatal to him, as having a dust kicked up in an old library.

Anent the "Deipnosophistae" of Athenaeus he writes most entertainingly:

> But as these Books related to the names, objects, and articles of diet, and to the art of cookery, is it not most probable, that they were written by a physician? Haller's inference here, however, must not be forgotten, that Athenaeus "etiam si non medicus fuerit, maxime diaeteticorum legi debet."
>
> Pray did not Hippocrates, Galen, Avicenna, Averroës, Avenzoar, Oribasius, Ægineta, etc. etc. all write on these matters? But, rhetoricians, poets, and philosophers in general, are wretched judges of eating and drinking. Poor things! they usually have no practice. And one alderman (*cominus gladio*) in this respect will out eat, or eat out, men of all professions.
>
> When however we are informed, that such stars as Galen of Pergamus, and Daphnus Ephesius, *moribus sacer*, were invited to an intellectual feast, where the solar rays of Grecian grace are reflected through the prism of Grecian eloquence, we may be allowed to cast a longing and retrospective eye upon the sparkling coruscations of their festive wit. And when these, again, are refracted through the various Greek editions of Aldus and Valderus, and assume the Roman garb under the translations of Natalis, Berdrotti, Casaubon, Schweighaeuser, and the classic union of Latin verse and prose, we may absolutely fancy ourselves at the Anacreontic board of these enchanting Deipnosophists. Let us not be fastidious, as to the correspondency, or dates, of the respective guests. Whether before, or after, new style; suffice, it was the honey-moon of human perception.
>
> And this high flight of Deipnosophia may well account for the abashing modesty which prevented translations of this work. It will, at the same time, diminish our surprise that Stephanus Niger, and Lazaro Bayfius (the former in his observations "De nimio vitae luxu," and the latter, "De vasculis") should have distilled off the ethereal spirit of Athenaeus's flagons, to embellish or give flavour to their own.
>
> Although the dainties of the human sensorium were the attributes of the banquet of wisdom, yet the work expressly includes the objects of cookery and of epicurism. And calipash and calipee were the established dishes, from which arose the exhalations of fun and fancy.
>
> Among the delicious treats of the table, Athenaeus had no occasion to refrain from the luxury of feasting on frogs. They were sometimes so plenteously showered down in rains, "ut domus ac viae omnes implerentur"; so that at length, to avoid them, the natives "de regione eâdem aufugere decreverunt." Athenaeus was convinced of the fact, "novi Deum praeterea multis in locis piscibus," also, "pluisse." Fishes and Frogs are cousins germain.
>
> These natives endeavoured, *primis diebus*, on the arrival of the frogs, "domus claudentes," to catch them in a trap, and as far as they were able, to keep killing; or to kill them, until there was killed "frog, and frog all."
>
> Now this brings on a retort of conscience. The R. T. Frog. Dib. (piano, piano!) has anathematized some of our ancient books in the York Minster Library, as having been destroyed, not by the worm, not by damp, not for want of being read, not by order of the Dean and Chapter, not by Time, that arrant old swindler, but by the rats! A positive revival on his part of an old family-feud; and of the memorable challenge of Captain Rat: "Turn out, ye frogs, that have a soul to die!" (Homer.)

To the work of Apicius Coelius, "De re coquinaria," we owe some comments on diet and cookery, regarded by the ancients as beneath the dignity of the most learned:

The family-name of Apicius *pro quovis guloso occurrit,* synonymous with alderman or doctor; which, when attached to the term *magnus,* as *magnus* alderman or doctor, implies a gorgeous man, or great concoctor. Casaubon, in his "Animadversiones in Athenaeum"[2] observes, "tres Romae tulit Apicios, gulae studio omnes infames."

The first is supposed to have lived in the time of Pompey and Sylla; the second under Augustus and Tiberius. He was *nepotum omnium altissimus gurges,* i.e., the Quin of his day. The third, or the Oyster Apicius, our author, under Trajan. So that the one, by his great gout, gave the family a relish for eating; the second, who is said by Suidas (though denied by Fabricius) to have composed a book, "De Gulæ irritamentis," thus provided a receptacle for food: the other taught how to prepare and cook it. We may ask, by the bye, how can men who excel in any point be considered as *infames?*

There is described, however, another Marcus Apicius, the younger, who inherited (like the rest of the family) "ad omne luxus ingenium mirum," a dead hand at it; and was also, *altissimus gurges.* So that one and all were, in taste, superlative. And Gul. Budaeus, writing "De Asse et partibus ejus"[3] which must not be ignorantly rendered into "an old ass, and his relatives," informs us, that "Phoenicopteri linguam praecipuè saporis esse Apicius docuit." He also, copying Pliny, repeats, "nepotum omnium altissimus gurges, cum sestertium millies in culinam congessisset."

In this work, which was printed in *aedibus Ascensianis* at Paris, a short narration may be consulted of the excesses of the Apicii. And these observations, though commonplace, may not be out of place.

If however we combine the festive feats of the metropolitan church of York, Archbishop Neville in the chair, and those of the civic state of York, our present Lord Mayor (Lord bless him) out of it, I think we could run the Apicii for the Claret stakes, neck and neck, over the course of Knavesmire. And I have always considered it, as very unfair treatment of the Apicii, that they should be so stigmatized and censured for a passion, which is very natural, and very delicious, and very nourishing, and very exhilarating, nay very composing, and very lasting. For, in it there is no fasting, but all feasting. 'Tis pleasing, without teazing; and, at the worse, produces only a wee exanthematous wheezing.

Why has man a stomach given to him of a certain capacity, if it were not to be filled, and to enable him to grow merry and fat. *Dic quaeso,* answer me that?

Albinus Torinus in the edition, from Basle, in 1541, by no means gives a flattering description of the state of the Codex of Apicius, "in eundem semilacerum et squalore obsitum Apicii codicem," as, "vix nomen divinâsse." Consult also, without punning on these matters, Lampreydeus and Heliogobblus, as the Alpha and Omega of feasting wit; the first a boiling dish, the other a roaster.

It is surprising how little comment such a writer as Atkinson allows, I will not say needs. How many have ever heard that the tube now known as the Eustachian tube was mentioned by Alcmaeon some five hundred years before Christ?

If this author was the disciple of Pythagoras, in the 35th age of the world or about 497 years before Christ, as is reported; it well becomes me to beg pardon of his Manes, for not having already introduced him.

He is mentioned as being the first Veterinary Surgeon, who wrote on the anatomy of animals. And was possibly a relation of the famous Milo, of Croton, who could bear a bull (I don't say bull and bear, *ne quid nimis!*) upon his shoulders. Milo might have been the apprentice of Alcmaeon; and now and then, *pro re nata,* in the way of his profession, have had occasion to carry a sick bull into the surgery to his master. Let us here observe, in a parenthesis, how surprisingly one trifling incident of history may clear up another, "and the sons of Alcmaeon shall never repine."

Goelicke makes a question, whether, in consequence of the observation of Alcmaeon, that goats breathed through a passage from the palate to the ears, (and has not man, a more modest animal than the goat, the same?) the Eustachian tube might have been known to him. Assuredly, if Alcmaeon knew that goats did breathe in that way, he knew there was a passage. And as he had not given it a name,

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[2] *Lib.* I, p. 22.

[3] *Lib.* IV, p. 15.

Eustachius chose so to do, after himself, i.e. the Eustachian Tube.

Was there not the via Appia, in Italy, and several other *viae*, named after their then respective masters or constructors? Nor was it a matter of course, that not any of these *viae* should have existed before there was a name affixed to them. But Plagiary does not at all appear to have formed any part of the character of Eustachius.

Eustachius had a much broader passage for his fame, than the *iter a palato ad aures*.

Have you ever been shocked at seeing the pages of some rare book being used to light fires or for baser purposes? This always irritated Atkinson, again and again he has his fling at it. Our old friend Aëtius of Amida serves as nail to hang one of them on:

This book "Tetrabiblos," is an excerpt from the writings of the ancient authors. And has been divided, by afterwriters, into sixteen books. The surgical subjects, in Cornarius's edition, commence with fourteenth book, or sermon; or the "Tetrabibli quarti, Sermonis secundi, page 739. Cornarius's edition concludes with an account *de ponderibus et mensuris*. So that eventually we perceive, he had adjudged everything by weight and measure; in which he has deserved, at least, as much merit as a grocer. And this is no small feat, in our days, for an author to perform.

By sermon is to be understood a book, of which the work comprised sixteen; or four Tetrabibles, each Tetrabible of four of these sermons, books, or discourses, and each discourse of so many chapters.

Now there are too many tea-tray bibles in our days; which makes them worth nothing. Every old washerwoman has her bit of butter sent to her, from the huckster's shop, wrapt up in one of the leaves. And I have occasionally seen them, like so many *muscae volitantes* in the turbid humours of a diseased eye, scudding about in all directions, or swimming down the channel of a common sewer.

Oh, we Bibliomaniacs! Oh, the subscriptions!

Of the charlatan side of Aëtius he is most amusing. The following exorcisms have been used by all medical bibliographers. Kurt Sprengel gives them in his article and I rather imagine the subsequent writers have borrowed from him or his plagiarists. No one gives a more readable account. If he could charm tonsils today he would make a fortune until the throat men had him hung:

Quackery is so pleasing, so natural, and recondite a passion, that we may sometimes excuse it. Aëtius occasionally mounted this hobby, and gave us some comical instructions. He recommends very categorical cures; if, perchance, flies or other light matters are blown into the eye, he orders us to close the clear eye and open the other, "they may come out," if not, *digito exime*, indeed, short and sweet!

Now, in searching old books, I am sometimes like a swallow; very content in skimming the surface to catch a few flies, it was in such a flight that I discovered this wonderful secret, or the "digito exime."

Having, therefore, nearly concluded the grave part of Aëtius's practice of physic, we shall proceed to the lighter parts.

Joculare tibi videtur
et sane bene
dum nihil habemus majus
calamo ludimus.

Aetius was probably a Christian; this by the bye should have come before. His incantations, like exorcism, in driving out the evil spirit, from one possessed, were curious. "Ad eductionem eorum quae in Tonsillas devorata sunt," what a hungry patient! "Statim te ad aegrum desidentem converte, ipsumque tibi attendere jube: ac dic, Egredere os, si tamen os, aut quicquid tandem existis. Quemadmodum . . . us ex sepulcro Lazarum eduxit; et quem admodum Jonam (poor Jonas, a very great ass indeed) ex ceto," a whale; very like a whale! "Atque apprehenso aegri gutture, (don't choak him) dic: Blasius martyr (a blazing fib) et Servus . . . ti dicit, aut ascende, aut descende," will you up, or will you down? The best Blasius I apprehend to be a good probang, but, Reader, is all this possible? What a pity for his fame's sake, that this man's faith had no larger mountains to move, than the Tonsils, *parturiunt montes*, what a loss of power!

According to our bibliographer the first man to write on smallpox was Aaron Alexandrinus:

> AARON, ALEXANDRINUS, (Circa, 1622[4]) Was he so named from his beard? Of course a Jew. He is stated about the twenty-second year of the seventh century under the reign of the Emperor Heraclius.
>
> He wrote a volume or Pandectae in thirty books, in Syriac, though belonging to the Greeks. But if Pan be deck'd ever so, he cannot be disguised. He still must have hair on; and is at best but a satyr. A satyr, though Syriac.
>
> Haly Abbas blames and bemoistens Aaron with the acid tartaric of criticism, for the negligence of his writings.
>
> It is to me, therefore, very doubtful, whether if Haly Abbas had met with brother Aaron, he might not, for this negligence, and as a demonstration, have placed his *pes cr(i)ticus in prima sede;* or, in the seat of honour of Mr. Aaron. What pretty work there would have been among these jealous warm climate authors, if the speedy virtues of the prussic acid had then been known to them. Dead in a moment!

Atkinson says he is a devout papist. I do not know. In speaking of Hugo Atratus of York, he says: "Even now it is to be hoped the reader will not suppose that I am introducing an author (though it looks very like it) because he was what I am, and is vulgarly denominated a Papist." He pokes a little well directed fun at some of the jarring sects. What a sly hand he was! Read the following:

> Another MS., "Avicennae oratio ad Deum Creatorem." To perform this homage well we should cast an eye upwards. There is ample divinity in the aspect of the heavens. Happy is the man who has the double vision of a finite, and of an everlasting life. It should serve him to set at nought the passing shadow of the former, and to establish himself on the never failing substance of the latter. It is but an easy concession of intellect, that the vast Being who creates a world should also accomplish its preservation. And, when we perceive, *primo intuitû*, that this magnificent Creator has left the canopy of heaven open to all creatures, what can induce us to parcel it out into various religions, sects, and departments? Is there no natural claim upwards for the Jew, Turk, or Infidel? That there was redemption for man from the earliest ages no doubt; but if the road to heaven be really strewed with flowers, the beauty of Christianity becomes admirable.

The first paragraph on Constantine, the African, expresses the same opinion. As we read on we wonder if his wife was a great talker. I leave it to your imagination.

> There are many of his codices in the royal library, at Paris; in the Ashmolean, and in Caius College, Cambridge. Perhaps we may like him better for being a Christian physician. I wish the Christians would be more interested in convincing the world, that they are not surpassed in morals by most of the tribes named savages! I am rather titubating in my opinion upon this subject.
>
> Africanus was a famous linguist; and so are many ladies we may say; and in such numbers, as makes it no rarity. But still a man who has the Arabian tongue, the Chaldean, Persian, Egyptian, Indian, Latin, Greek, perhaps French and English, at his fingers' ends (not meaning merely the dictionaries), may in some measure balance the merit of the volubility of these ladies in this accomplishment. Of this I judge not.
>
> Constantinus, as Eloy observes, attached himself principally to Hippocrates, Galen, and Haly Abbas; but, like others, he could not die contented without having written a "Libellus de Urinis"; which may be found in a codex in the royal library, at Paris, if any lady or gentleman wishes to consult it. There is likewise another book on a still more interesting, though a pa pa subject. I shall not name it.

The work of Albateric who about the year 1070 translated the entire Galenic canon into Arabic, gives an opportunity for some comments on the effect of climate on writing and of that tiresome jade, Fame, whom so many follow fitfully only to be jilted when it comes to the final test. Better none of her. What will it matter a hundred or a thousand years from now?

> Never do I read of an Arabian, or of an Arabic translation, but I am transported into that land of physicians, philosophers, and alchymists, in which fancy and the luxuries of the human

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[4] This date is that given by Atkinson but should be 622.

mind appear so particularly to vegetate. Not common even, must be the soil, which shall be produced, from one man, a complete translation of the works of Galen.

The Arabian Nights Entertainments (so congenial to fiction and fancy) we might expect from a cheering sun in gracious land. But grave aphorisms on disease and death, their details and miseries, were scarce to be contemplated from the splendid views of Arabian alchymy.

When we peruse attentively the works of many of those men, who grace the early ages, as well as those of the 15th century, we must be struck with the magnificence of their literary exploits and labours. It may well convince us, that the advancement of learning creeps on like a snail, by slow and painful progress; and many an industrious traveller passes wearisomely over the ground, without the happiness of being able to leave the slightest trace behind him. Trace like a wave, of which no trace returns!

How miserable must be the remainder of that man's life, who has worn down his best days in vain attempts at rising; and when death is approaching, finds the doors of fame barred to him! Where shall be his consolation? "quae enim potest in vita esse jucunditas, cum dies et noctes cogitandum sit, jam jamque esse moriendum." (Cic. Tusc.)

If the divine Cicero emblazoned with everlasting fame, could be susceptible of such a rigor, *que deviendra pauvre moi?*

There must have been some peculiar quality of the air of York to have produced such genial wits as Sterne and Atkinson, not to mention others: the quality of mind is so similar. Some have ascribed the gay lightheartedness of the Parisians to emanations from the limestone, or whatever it is, on which Paris is built. I have always thought that the radiant activity of the place was due to the quality of the food and drink and now that savants are solemnly discussing the radioactivity of foods, why not? But I must leave this fascinating subject and get back to my author.

Concerning Haly Abbas, the Persian, I give a somewhat long quotation, but it is in my humble opinion worth it:

The work styled Almaleki contains twenty books; it was translated from Arabic into Latin by Stephanus, of Antioch, a student of philosophy, and illustrated by Michael di Capella, in the year 1127. It has been attributed to Isaacum Israelitum, and is sometimes taken for, and confounded with, this last author's work, "Pantechion." These works have been supposed to be identified in one person. I don't apprehend, however, that Isaac, a name so common to the Jew, would have had any likelihood of being godfathered on the Persian. The work deserves the character affixed to it, of excellent.

The edition of Jacobymi, Lugd. 1523, is a very good one. Haller used this edition, and it is one which I have. It affects *totius Medicinae*, in two parts: the *Theoricae pars* consisting of 135 leaves, double columns, in ten books, black or Gothic letter, with the *expositio terminorum Arabicorum*. The books are full of practice and prescriptions; the title page is neat, and wrought with the facsimiles or portraits (no doubt) of Hippocrates, Haly, and Galen; all three are poring over their books, and apparently in a very brown study, almost approaching to black. There are two young and winning women looking up at them, seemingly petitioning them to come down. Judging by the cut of their gowns, and their dialect, they are French women, (strange!) one is singing out "Allez, Allez," the other "A bas, A bas." Devils incarnate!

This is an odd concatenation. Why were the women placed there, who were they, what were they? Was it merely a (very unjustifiable) piece of wit, or malice, in the printer only, or the printer and his devil, there to place them? Why should there be only two ladies below stairs, when above there were three gentlemen. Were Hippocrates, Galen, or Haly Abbas, likely to bother themselves with women? Under these difficulties I must again submit the case to the learned reader. (In my own private opinion it was malice prepense.)

The theoretical part of the book contains an inquiry into various subjects, as, of humours and complexions, being somewhat on the model of Galen, *de usu partium*. On the figure and proportion of the body; on temperaments; on the aptitude of parts, as spleen, liver, bladder, uterus; on the theory of fever; of particular actions, as laughing, or sneezing; on pulses; on the affections of the head, as phrenitis, and lethargies; on fluxes, and secretions; on regimen; on baths, natural, and non-natural; and on *varia variorum*. There is, however, a curious chapter, which at least may amuse us, viz. *de sani corporis signis et servis emendis.*

The most particular attention required to be paid to all circumstances affecting mind and body of a servant, whom you are about to buy or hire, at once gives us an idea of the abject state of slavery, in which they were in those days, in that country, as well as in the West Indies. It assures us also, that servants then also stood statutes, (and Statues?) once a year, to be hired in public places, as they now do; as *egratia, in vico nostro,* named Pavement, York.

Mercy upon us! if such an one as W. W., M. P., will be forced nilliwilly; or were to be forced to come through York, and pass through Pavement, *sole glorioso,* on that day; or come through it by accident; what pretty rumpus there would be the next week in the House of Commons. These servants were to be examined from top to toe. "Tam tunc (says Dr. Haly) autem a Capite incipe (that is from top), et ejus diligenter habitudines vide et agnosce, et ad ea quae subsunt et sequuntur descende membra, et sic usque ad inferiora (that is to toe, or presently will be) sin. ordinis membrorum consequentia; donec ad pedes (one would think a do nec, was a long way from *pedes*) perveneris, et intelliges," etc. So that you are to examine the natural complexion and health of the servant, "et inquiritur ab eo utrum quid insit vitii nec ne." The hirer should be able to judge of the complexion by the colour of the skin; that it be not too black, nor too white, nor too much saturnine.

He or she must next reckon on the just coaptation of body and parts. That the servants be neither too fat, nor too lean; and that neither epilepsy, nor any such falling propensity, belongs to them. The buyer or hirer must pay most particular attention to the appearance of the skin; and with this view, it is necessary, "loco claro intueri ne forte sit in ea morphea alba, aut lepra aut sarpedo Petigo," etc. In fact, and if so, there must have been a stripping room.

Then we must proceed to the individual members, or, *de speculatione membrorum,* beginning with the head, in which there should not be any offensive little creatures. Any alopecia, (a lop, *quid?*) or (as in mine I doubt) any maggots; and, in going downwards, or to extremities, you must *saepius manum appone et palpa* (an papa) to feel if all be right or wrong.

Quoques inveneris super, and (on other occasions) *infra umbilicum usque;* and, in progression, *debinc etiam testiculos cujusmodi sint inquirere.* Is not this taking the bull by the horns? Now we may as well tarry here to make one homely observation. How could any modest man, or much less how could any modest spinster, or any of the venerable *corps diplomatique* of old maids, who wanted to hire a man, or any female servant (even with Haly's authority), have ventured in open day, in open statutes, and in a public street, to absolve all these necessary services, where would be their *tactus eruditus?* How could a master or mistress investigate the viscera of a servant, after this method; "precipe supinum jacere (oh dear) et caput ejus plano positu sit, et manus ipsius tamque ad pedes extende et genua ipsius (avaunt) parum subleva et tange sub planum ventris (in the Pavement), ejus a loco oris stomachi et his quae sub hypochondrisis ejus sunt," but I will not pass the Rubicon, *prob pudor,* no!

Therefore, after some other such pieces of information, and after advising us to be sure not to hire a bandy-legg'd lady or gentleman (if lady's maid, or valet, were wanted) Haly dismisses this part of his subject; and perhaps this specimen may induce, I hope, at least the graver part of the medical community, to consult farther this useful work.

Averroës of Cordova comes in for a small quotation which has been marked in the borrowed edition on my desk, doubtless by the owner whom I fail to name. I am afraid the censor might object if I translated it, but I forget they do not censor medical books and the flood of pornographic literature masquerading as sociology is remarkable. Last summer I sat next to a well-known writer at one of those luncheons given weekly by certain clubs, suspiciously like uplift organizations, which now abound in this peaceful land. I started a story about alcohol and other things. "I beg your pardon," said my neighbor. "In these meetings we never mention alcohol or women, but," he added smilingly, "we can discuss sociology, go on with your story." Oh the delightful hypocrisy! Most of them do not see it and the others grin. But to get back to the story, it is a good one:

> The edition of 1542, of the Colliget, may be more barbarous than some of its contents; for in "De Sanitatis Functionibus," of the former edition, this author appears equally good tempered, as credulous, which is a quality ill adapted, and seldom seen, in a parish officer of the present day. "Porro Matrona quaedam e regione aedium nostrarum habitabat, juravit nobis vel conceptis verbis, cum balneum intrasset, in quo improbi quidem homines antea dum lavarent, semen genitale profudissent, statim concepisse: quod etsi incredibile videretur, fecit nihilominus vitae ilius anteactae integra atque inculpata castimonia, ut fidem verbis suis adhiberem."[5]
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> Who shall now answer that Tristram Shandy had not consulted this passage, before he had adventured to recommend the philosophical experiment, "par moyen d'un petit tuyeau."

What a rumble the name of Albertus (*magnus*) Bolstalius has. The good Bishop of Ratisbone wrote a number of books but only one remains of interest, and that because it deals with a subject which is perrennial. The "Libellus de secretis mulierum" and its author come in for some comment. Just before is a remark, "I hope this editor did not suffer by the flames which injured the church." He goes on:

> And much more may we hope they did not violate the *rue des belles femmes*, not far off, but, with leave, just one word before we go any farther. Is it not obvious, that the great Albertus, the bishop (as no doubt he attended properly to the press) must have spent a great portion of his time, in conning over the impressions, *De Secretis Mulierum*. In a Roman Catholic Bishop, it is inexcusable, in a Protestant bad enough. But *e contra*, had he finished his career by writing on the moral virtues, in lieu of the virtues of plants, he would have ended more prettily. But, *perge viator*!
>
> Several tracts or codices of this author are to be found in the Bodleian library; in the collection of Caius College, Cambridge; and New College, Oxford. I hope the hint will not set all the fellows of colleges in looking after them. But twenty-one folio volumes, of Mr. Jammy (I am sorry to remark it, as he is my name-sake) in barbarous Latin, are quite enough for the amusement of the patient reader; and enough is as good as a feast.
>
> These twenty-one folio volumes, of my namesake, are composed and formed chiefly from the works of Albertus. The profession of medicine, and of anatomy, are more especially alluded to and implicated in the above subjects; thus, "De Homine,"[6] De Formatione Hominis,"[7] "De Animalibus,"[8] "De Vita et Morte, De Motibus Animalium, De Juventute et Senectute"[9] "De Nutrimento et Nutribili,"[10] "De Secretis Mulierum libellus." The least said is soonest mended. In fact, he is a minor Aristotle, "Scripsit pene infinita opuscula. Qui et omnia opera Aristotelis commentatus est." Schedelius.
>
> In our days the whole bench of bishops would scarcely have time to write half so much, tied down as they now are; i.e. when in town, to attend, by necessity, the drawing rooms, lest they should have their gowns taken over their shoulders; or, when in the country, are obliged, through *morûm encomia*, to give public days at their palaces. I take it for granted, it must have been the usage of old times, and in which the bishop of Ratisbone or Albertus, as he was an elegant man, might and did cut a figure. Alack, how I have heard my dear Father (*sit sacrum*) descant with his highest energies (and these he had) upon the blandishments and conviviality of Drummond, then gracing the mitre of York.
>
> At his festive board of urbanity divine, was champagne wit, and champagne wine; the oxygen of which, however, he could restrain, as by a magic wand, within the due longitude and latitude of the Holy Land.
>
> Albertus, at best, in many instances, was but an Amateur anatomist, contented to play upon the surface without approfonding the secrets; but as he was decidedly a great Man, some attention is due to the notice of his works, and to him. As far, however, as *petits*, and very poor *jeux d'esprit* have gone, I have probably familiarised too much with a bishop; and I may have improperly taken that, for which so to do,

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[5] *Vide* ed. 1537.

[6] *Lib.* I.

[7] *Lib.* I.

[8] *Lib.* xx *vel* xxvi.

[9] *Lib.* I.

[10] *Lib.* I.

he might not have given me, a dispensation. The fanning of my wings, however, has chiefly played over his work, "De Secretis"; as any thing I doubt but the sublime for me; but yet, I shall be in a sad story, if it should turn out, as it appears to be, a contested matter, whether Albertus was the author of the book, "De Secretis Mulierum."

It would also appear, that Albertus was not so well versed in the true and private history of the stars, as he was of the garters; for, in affecting to elucidate the influence of these stars, he seems quite planet-struck with nonsense and superstition, and to out-Aristotle Aristotle in absurd inferences.

Whereas, in describing the effects of hysteria, as a consequence of sympathy of the uterus, he not only very classically describes the pathology of the parts, but recommends a practice (I doubt become too popular since that day), in regard to the cure of the complaint; but as "Illum periisse duco, cui quidem periit pudor," I shall forbear the repetition.

Of that patron saint of lovers of good brandy, the first distiller, or at any rate the first to publish the use of Aqua Vitae, Arnold of Villanova ought in these dry days be given his due. His biographers always fail: they go off on a tangent missing much that should receive favorable comment. I shall have to try some day to remedy all this. Atkinson, no better than the rest in this direction but much more amusing, makes some comments in the style of Sterne. But first hear what he has to say of the "Regimen sanitatis." By the way Hoeber has recently reprinted the Harington Translation of this with an introduction by Dr. Francis R. Packard and Lieut. Col. Fielding H. Garrison.

We must not mistake or identify the work "De Regimine Salernitano," with the one, "Regimen Sanitatis." The Schola Salernitana was restored by Jean de Milan, about the year 1100. The former was the production of the Saliternian Doctors, edited in verse, and was written as a book of maxims of health, for the then King of England.

The "Regimen Sanitatis," of Villa Nova, was, no doubt in my mind, a work of his own, in which there was a spice or rivalship with the other (not to say of vanity) being upon the same subject. What Villa Nova wrote on the "Regimen Saliternitum," was only a commentary; what was written by him on the other score was, I presume, an original composition. They are, however, both included in one volume, in my possession, of the date of 1497, printed at Bergomensis, by Bonetus Locatelli, at the expense of the spirited Octavian Scotus.

The "Regimen Sanitatis," of Villa Nova, was evidently posterior to the former; both from its date, and from the insertion at the head, of the motto or lines to which I have above alluded; which motto I have specified to have been taken from the "Schola Salernitana."

The "Regimen Sanitatis" begins thus, "Anglicorum regi conscripsit Scola Solennis, ad regimen vitae praesens hoc medicinale. Si vis," etc. It may here be observed, that the author or authors of the "Schola Salernitana" are not known; or, whether it was the work of one man, or of a body of men. In a codex of this work, stiled by Zach. Silvius, Tulloviano, the following is written:"Explicat (lege explicit) Tract, qui dicitur Flores Medicinae, compilatus in studio Solerii a Magist. Joan de Mediolana instructi Medicinalis Doctore egregio, completioni cujus concordarunt omnes Magistri illius studui. Tiraboschi."

Arnoldus, de Villa Nova, was what is usually stiled "rather a comical fellow." He could not be content with his proper profession, but must undertake to dogmatize (I do not mean to go a hunting) and to write on theology. But in 1317, he was called to account, and his works and errors were condemned by order of the brother preachers at Tarragona; he was hence obliged to quit Paris (who would not quit such a place?) and, being sent on an embassy, to Pope Clement the Fifth, he was unluckily drowned at sea.

The Pope ordered *De Profundis's* for him (too shallow resources I doubt, considering the depth of water) and much regretted the privation of a work which Arnoldus had always promised him. He inserted this into his Pontifical letter, of the 19th of May, 1312; endeavouring by this means to recover it, if in existence; but sorry I am to record, that neither was the Pope's Pontifical letter able to produce the work; nor, the *De Profundis's* to bring Nova *de novo*, to dry land; so both were lost. No dry joke, at any rate, unless to his brotherhood.

The poor author had been condemned by his brethren (Cannibals) on nineteen different articles, and if they had it in their power, say on the thirty-nine; one of which was, for foretelling that the world would be at an end in thirteen hundred and thirty-three. They were, therefore, thirteen hundred and thirty-three times obliged to him, for allowing such rascals time to prepare themselves; and the remaining articles (nine of which are in the Castilian language, and five in Latin, as seen in a MS. in my edition), were all alike condemned by them; and of course without benefit of clergy; nay, even Pope Innocent the Second (don't suppose he was only the second innocent Pope, for they are all innocent), in 1539, by no means thought Villa Nova's works so innocent, as to allow his clergy to read them; but mark ye now, they stole a sly peep at them whenever they could, for he was a tasty Villa, in his descriptions which, *ad Morbos Mulierum spectant;* and Monks are mortal men. Nova, however, *non obstante*, was, *pro Haeretico*, to the black dog *damnatus*, which, as an anathema, is a serious business.

Soliloquy. It is to be feared, and must be owned no doubt, that in many *opera*, where Abbots and their *Similes* grace the pages, there exists, in their language, a degree of pruriency (like an *esprit du corps*) which should not be evinced, either in the titles of such books, by the Abbots, or in the subjects. In this work, among others, we have instances; for who should expect in so chaste a title as "De ornatu Mulierum" (into the contents of which, the vanity of the sex might reasonably induce them to inquire) to find a recipe from Villa Nova, "ut desiderium et dulcedo augeatur," which has nothing to do with eating or drinking, or dress; or *encore un coup* (shocking) *ad virgam erigendam.*

Simple Villa Nova! what occasion for any of his admonitions; could he suppose they did not understand the rights of man. Why not leave the expedient to the genius and resources of the ladies; they all knew full well, that there is no steering the best rigged man of war in a storm, without command of the steerage; and they never affect to strike fire out of a cheese paring.

The holy Abbot could not have edited this last recipe for his own use, as it was quite out of his way; and the fancy dress maker, who was at liberty to read it as a printed book, printed under the auspices of a Cardinal's Cap, would as little have suspected to have stumbled upon so gross an indecency. From it, therefore, I shall calmly beg leave to draw this important inference, in favour of modern pudicity, that we medical men are now much more chaste than our forefathers.

The apothecaries of the present day suppose, that the physicians often give them trouble enough, even at twelve o'clock at night, to compound their fancied farragos; but let these apothecaries, or pot carriers, look over Arnoldus' antidotariums, and they will learn to live cheerful and contented under the present recipe, rocal slavery, such as it may be.

Arnoldus should have been christened *De Nomine novo*. He has some dashing terms, as "Rosarum Philosophorum," "Novum Lumen," "Sigillum et flos Medicinae," etc., which others have equally remarked. Never mind, every man to his humours. He was a very useful practitioner.

Of Rhazes, whom he includes in the A's by using the name Almanson, he has but little comment. I must, however, quote a few lines:

This author, in reality, was Abubeter Rhazes, a Mahometan, of famous celebrity. He lived, according to report, one hundred and twenty years; began his medical tricks at thirty, turned quack or empiricus for forty years, and a rational being or physician, for forty more, so that he was eighty years practising physic, before he came to his senses; his medical senses. He flourished (and it may well be deemed flourishing) according to some, *Anno Christi* 1070, according to Justus, 1085, under Henry the fourth, Emperor; and according to Moreau, he lived in the time of Almansor Rex Cordubensis, 966; therefore the *causa efficiens* of the writing of this book, "fuit Rasis Zaccharie filius precepto Regis Almansoris filli Isaias vel Isias; et sic patet quod sit nomen auctoris."

The book, in reality, is a kind of *Regimen Sanitatis*, for King Almansor, written by command on his Majesty. Whether it was a *Regimen Sanitatis*, or of Necrosis to the King, I dare not answer, but when we shall have read on a little farther, we may judge.

In fact, a mere repetition and recital of various medicines and applications, as tedious as endless. But we must not, in conscience, pass by the encomium of Lindenus, on the contents

> of the edition of Rhazes, of 1544. I have this edition of Rhazes, which I value the more as it has this inscription in it, "A present from my friend. Mr. P. Pott, Oct. 23d, 1785, Dr. P." (David Pitcairne) How trifles please children! Booksellers know this well. . . .
>
> In this obvious sense and knowledge of disease by symptoms, how much I have to regret being deprived of the advantage of attending, as medical man, the corporation and aldermen of York. How? by being gagged and choaked, and stopped in my growth, by the act of supremacy. This, this nasty thing, so abhorrent to my religion, alone prevented my being raised above the chamberlain's honourable office; which (honourable as Apis in Egypt could be; by the bye, is Apis a water God?) cost me seven pounds; nay, robbed me of a sinecure medical practice, practice which would never have required or troubled me when their members dined at their own expense; but only upon sessions or feast days, and even then, at a sufficient early hour in the evening, to have enabled me to apply the sovereign remedy, an emetic, my infallible antidote; and then again, to have gone securely to bed.

Of another character he gives some quaint comment. He also becomes a prophet, a true one, as the late war has amply proved. The Sir Humphry Davys of our day have indeed frightened all Christendom:

> How much more solemn for a physician is the name of Ricardus Anglicus, than plain Dick English. Had he been here I durst not have said this; perhaps my shoulders might have had a taste of his cat-o'-nine-tails, or *correctorium*, a few times round his *theatrum chemicum*. Pretty amusement no doubt for a bye stander; but by my sympathy, I think I feel it now. Oh sympathy, sympathy, Man's sad tormentor!
>
> Poor Richard must needs have a touch at this uric acid; but the juggling art of chemistry now is so delightfully improved, that the tricks pass as quick as lightning. And we make one chemical fox draw another from its earth. No acid for a moment can resist its alkali, thus, one wave in the ocean lashing against another, produces, with brilliance, chemically or metaphorically, phosphoric light. Well might cunning monks of old make such a fool of St. Januarius. If Sir Humphrey Davy were to turn monk, he soon might hum and frighten all Christendom.
>
> Even now it is to be hoped the reader will not suppose that I am introducing an author (though it looks very like it) because he was what I am, and is vulgarly denominated a Papist.
>
> AFFEYTAT, FORTUNIUS. (*Venet.* 1549), *Liber de Hermaphroditis*, no accounting for taste! When nature commits an Hermaphroditas, does she intend practising upon herself or us? It is difficult to say, whether she wishes to take up a loop, or to let one down. No matter, if she has only a loop hole to creep out. This game may be pretty diversion for Nature, but to a spectator it has an ugly look. *Vide* Monster. If the Philosopher does not understand the above simile, an Old Wife will.

All lovers of Sterne will be glad to know that Atkinson commented on Albosius. But enough, if you know your Tristram Shandy well no comment is needed.

> The report of this author depends on no light material. This *portentosum Lithopaedium* was (a petrified child) *in utero per* 28 *annos contentum.* Nothing living or less obdurate could so long have been retained or content in the situation. It is, however, some comfort to be assured, that the poor mother of this fossil mass must have been at least in a tolerable quiescent state with such incumbrances, for so many years. And this author is moreover worth mentioning, if it be only on account of the curious mistake, which Burton in his remarks attaches to Smellie. "The seventeenth author, collected as you tell us, is *Lithopaedis Senensis*, which instead of being an author, is only the drawing of a petrified child." It may be seen in the account published by Albosius; and at the end of Cordaeus's works in Spachius. To this (a very possible mistake) I have elsewhere adverted. It was a blunder in Smellie, which might have happened to any less blundering man; and, as far as a *jeu d'esprit*, or a retort courteous from Burton, is very allowable,; for if Smellie chose to play at bowls with Burton, from this very stone he might expect a rubber. The fact of the child, may be truly numbered as one of the sportings of nature. Nature seems frequently to make use of children in this way,

as play things. A child made of stone, or converted into stone; a child with two heads; a child conjured into a boy's belly; a pig-snouted child; a squeaking child, without brains, therefore without soul or sentiment, yet a squeaking child (which I have seen and I have heard, 'pon my honour) are remarkable pretty play things for these sportings of nature. And which, no doubt, are as easily produced by her manufacturers, as a ready modeller in wax can manipulate his facetiae and varieties.

There are some monsters: as monstrous gluttons; who would have wished to have doubled themselves, or to have become bifid, if it were only to be double fed, or bifed. Did not the celebrated Quin make some such supplicating prayer, I ask?

On the subject of borrowing from other authors which has inspired such expressions of opinion as the magnificent "Illustrations from Sterne" by John Ferriar, Atkinson says under the heading of Albertinus Hannibal:

> Eloy observes, that Senac has made some use of this work. And pray for what end was it written? We must all plagiarize from each other, or little will be made out, in so intricate an art as medicine. When a writer affects to despise the works of others, and ventures to produce his own as valuable and original, we may be assured that, in this instance at least, he is an original fool at any rate. I well remember being formerly much disgusted with this affection in a very great man; in a man whose talents stood in no need of such a despicable resource to announce them.

"De motu cordis," by that remarkable scholar Thomas Aquinas, whom the church threatened and finally canonized, leads to a slight digression on religious matters, a very "Shandyean" one you will agree.

> Always something pretty from our popish saints! But why need we affect to identify them. In your religion, reader, you probably don't pretend to canonize. I cannot suppose you have not fit objects; one man is hailed as a saint, when the next deems a lunatic, *tot Homines quot Sententiae*. Whenever I am present at a general election, for instance, notwithstanding the emblazoned claims to virtue and devotedness, I always fancy there is more of madness than mitigation in the promises. How comes it? Is England the chief asylum for maniacs? or, are politics the curse and disgrace of the nation? Verily, verily, I think so. I had some thoughts of placing our Saint Thomas at the head of my catalogue, but I recollected, we have your Saints Oliver and Henry already. *Ne quid nimis*! They might not have suited; for on their side I take it, "Melior est tuta pax, quam sperata victoria."
>
> "Lie still if you are wise,
> You'll be d--d if you rise."
> (*Vide* Westminster Abbey.)
>
> But in religious matters I must affect nothing, for I am no Unitarian, no Biarian, no Trinitarian, no *in unum* Congregarian, no Methodist or Ranter, no Protestant: except that I protest merely to be, a (*bon*) Roman Catholic, as the best Catholicon going. For *sic itur* (I am told) *ad astra*, and who travels safer? Nay I will not even condescend to be a free thinker, though I doubt a free writer. My own free wit I fear (like too much common salt), when in full dose will make you sick; but when I wish to give any for a cure; to be administer'd pure; I steal, or borrow, or run atic. Since, however, every thing now is "No popery," to what a miserable existence are we poor Papists doomed! Hard is the fate of him, whose preservation and every other ration seems to depend upon his chylification. Whose class even as an animal can scarcely be identified. He is obliged, from the temperate laws of his religion, to be continually varying his dietetic circumstances. He is not, strictly speaking, a carnivorous animal, although he be man, and as man should be; because he is often interdicted eating meat. He is not a high-bred, but a hybrid Christian. If he be allowed *permissu superiorum* to eat this meat (rarely venison), once a week, the next, he dares scarcely chew the cud, or if none be there to chew, be downright starves. Now, there might be some prospect of a blissful year for him, were there luckily a leap year of Lent, or rather a leap over lent year; but no, the vermin papist is like the horse in a mill, or like the maggot in a deaf nut, who works incessantly, and in vain, round the dark concave of a melancholy pabulumless circle, neither with beginning nor end, sad emblem of Eternity!

> The Papist's stomach, like Papin's digester, must produce something from almost nothing, or he dies a martyr. And not only is he subject to the direst want of sustenance, but to the unceasing taunts of all other sectaries. And bitter is the joke, when an unfeeling latitudinarian comes behind him during Lent, and rubs a beef steak over his longing lips, without suffering it to abide there, villainous sarcasm! For my own part, I have ever been, on the one hand (as a noted bigot) a victim to this practical wit; although I hate such wit. On the other, branded by my own party, for want of faith, as an heretic. It would almost make a man to hope, and be contented to die, a good fat Jew, in preference to living as a half starved Christian.

Of Æpinus and his book on the similarity of electricity and magnetism Atkinson has little to say, but it presents an opportunity for a long digression on the subject of electricity. The following paragraph immediately recalls Dr. George Crile:

> To draw into resemblance the affinity; I would compare the brain itself to the cylinder of an electrical machine. External objects I compare to the atmosphere, from whence animal fire is collected; in the same manner as the fire is from the atmosphere or the electric. The soul I compare to the rubber, which being set in motion, by the wheel of external objects, throws the fire or ideas it collects upon the brain. The brain discharges it upon the nerves, its conductors; and the muscles and other parts become electrified bodies. . . .
>
> Does not life, where ordinary parts are wanting, retire to, or reside in others, actually existent. And is not this a proof, that the same principle of life or soul, can perform its duties and accomplish its faculties in, and from, any part wherein animal life does exist? But, however, be it as it may, reader, don't let us quarrel about it; I'll assure you that it is very immaterial to me, whether you allow me my material man or not; convinced, however, I am, that without material, there is no man. If you form his life, intellect, or soul, out of nothing, I have been taught to believe, that *ex nihilo nihil fit;* or, as my Master in arithmetic was wont to say, in allusion to my brains, from nothing comes, nothing, Sir!

Of John Aikin, that most delightful of medical biographers, he says:

> Aikin is a delightful author; clear, neat, and sensible writing. From both of these I have borrowed in many instances; and any man may be happy so to borrow; for we seldom shall find more admirable specimens of judgment, learning, selection, and assiduity, than in these two surprising men. That part of Aikin's works, viz., "Biographical Memoirs of Medicine in Great Britain," which particularly falls in with the cold-blooded apathy of my author-hunting folly, is characterized in its source, as of a much more pleasant and instructing nature, than mine can be. For it professes to draw its gleams and treasures, "since the revival of literature only"; and does not affect to derive them, as I have occasionally done, from obscure and ancient records.
>
> Seeing therefore how agreeable and instructing a work Aikin's has proved, it might have been a lesson to me. It might have induced me to shut up the few dark and dismal dens, and lurking holes, into which I have occasionally ventured for my information. But there must be a balance in nature; and if every biographer were to write as entertaining and alluring works as Aikin, the dull dogs and prowlers of science would have little left to feed on as Pabulum.

A good example of the rapier-like thrusts which Atkinson could deal is his comment on J. Steph Adam, with its defense of punning:

> From the solitary specimen of this Adam's anatomical study, he appears to have had a greater predilection for farriery than physic. Indeed, unless he had cut up his wife, or one of his family, where were there any other human subjects, from whence he could anatomize, at least according to law. May we not also infer, from this instance, that the anatomy which he had learned from his ancestors proved that there had been Bucks or *Cervi* in Paradise. Surely not of this hard-hearted *ossa cordis* sort! But the Buck, as I have hinted before, even there had his mistress, A dam.
>
> Is there not a defence for punning? Much recondite learning is to be squeezed out of the enigmatous or punning envelope of men's language and expressions. It is a double entendre-

ship of science! The number of select characters who have espoused the trick of punning or of *jeux de mots*, when *artistement introduits*, may be adducted in defence, or even semi-approval of this venial sin. It may be considered as a retrograde sort of wit. "You are always letting puns," an old clergyman said to Sterne, "it deserves punishment." "That," replied Sterne, "is as the pun is meant." The old fellow thought he was coming sterne upon him.

For pure whimsicality Atkinson was nearly as good as the inimitable Sterne. Witness the following:

McADAM, The *Doctor Viarum*, or Road Doctor. This appellation is not synonymous with "make" Adam, as we shall see below; for, Adam *primus* had no father.

The present McAdam is a hardened character, and must not be forgotten. He is famous at this day for making hard, and mending soft, turnpike roads.

He could not have learn'd this art from his ancestors, as they resided in a garden, and never went but once (post haste) out of it! Before that period they walked on turf, or fortunately, had gone on velvet, until Satan was the ruin of them. But he may have acquired it from the Romans, whose military roads were much on this construction.

ANECDOTE: Being one of the commissioners for a turnpike road, near York, we were letting the toll and repairing of the road to the best bidder. Each candidate brought some pretensions of skill in the art of road making; one of them (a rough subject) was asked, if he was acquainted with the new mode of McAdam? McAdam! why gentlemen, he replied, I made roads before Adam was born! (A laugh,) pray laugh; which at once certified two points: 1st, that there were roads before Adam was born; and 2nd, that Adam really might have had a father and mother. But if Adam, as we are informed, was actually the first man, he could not have had a father; and, if he had no father, there was no occasion for a mother; and, if the first Adam was a black, this rough fellow of ours told a black lie of him; for he never was born. Question: Must there not also have been a white Adam? For, notwithstanding the garbled accounts of naturalists; from a black a black must come. Pie-balls are a family of their own. And we men who are white, according to our parish registers, cannot now be produced without fathers. Indeed the law obliges us to have fathers. Then only think, Black Adam might have snapped his fingers at the parish!

Ballonius is one of the notable B's. He was an astute observer, a man of parts. His best work according to Haller is the "Epidemicorum et Ephemeridum." Ballonius was the first to describe whooping-cough in 1578 and the first to use the term rheumatism. His works were published posthumously and include a dictionary of medical terms. He revived the Hippocratic idea of "epidemic constitution," foreshadowing as Garrison says, the teachings which did so much to make Sydenham famous. Atkinson says little of him but he makes some personal notes of unusual interest.

In favour of the Labyrinthus, Kestner gives us Patin's opinion at full length, which has some weight. "Il est excellent pour tout médecin qui veut raisonner et faire son métier avec science et autorité. Je vous prie de l'indiquer a votre fils ainé (which is one reason why I copy it here, that my son may see it) a fin qu'il s'en serve, et qu'il le lise soigneusement et la porte dans son pochette (how unlucky, the medical dandies wear no pockets in our days) comme un *veni mecum* ou plutôt, comme un petit trésor de belle science, et de bonne méthode."

Patin generally told the truth *bardiment*, except *de temps en temps;* as when the shade of a Prince passed by. Notwithstanding the great concern for his son, and care of his education; should we have conceived it to have turned to no better account, than to have produced a man; a most learned man! who could not keep his hands from picking and stealing. But suffice to observe; he was a Collector. Not on the high road, but in private. In other words he was an Antiquary. "Poeta nascitur non fit." All Collectors steal naturally! They cannot help it. *Caveant Antiquarii*, beware of Antiquaries.

Thank Heaven, in our York Cabinet, we have an honest appendage, a little bell, a *tintinnaculus;* which strikes the alarm, whenever an Antiquary approaches. It goes off by a secret spring. We have never lost anything since it was used; it has done well by us.

We observe that the works of Ballonius were edited frequently by Thevart, who was his

> nephew, by his wife's side, and afterwards became the heir to his manuscripts. An account of such of them as were prepared and left ready for the press, was in Thevart's library. The reader may refer to them in Mangetus, where there is a very copious and complimentary account of the general life of Ballonius. He considers him as an author thus, "Stylus illi floridus, limatus, nitidus, dictio compta et elegans, circumcisa potius quam diffuse"; which reminds me, that I ought to apologize to the student for being myself so diffuse a plagiarist on this occasion. But where an author is on all sides praised and recommended as particularly useful, to him we may be allowed to sacrifice rather deeply.
>
> It is to me (advanced in years as I now am) of very little consequence what books shall survive me: or who but my son shall procure them. Ere long probably the *terebra occula* of the wood-worms will take as many liberties with my person, as the Dermestes and Blattae have already done with some of my books and preparations. And attendant upon the time I consume in reading them, and the follies of the flowing pen, I have the excuse of long usage, and of an exuberance of *con amore,* which, right or wrong, fastens to me, even in my lucubrations. The gentlemen of the lamp oil and night-cap, no doubt, will trim me prettily for this *vile amore.*

How suggestive the following paragraph of the writings of Henry L. Mencken, the critic and essayist! If I saw it apart from the context I should almost name him as the author, as it is a theme on which he has written often. It is apropos of Robert Boyle's "Paradoxa Hydrostatica":

> There is a paradox which always strikes me in natural philosophy; and which I do not see among these paradoxes: Why has woman, the weaker of the sexes, intellectually and physically always the advantage over man? She is not a bubble and swims at the top. Paradox second: has Boyle in this second paradox burst the bubble? Let us know: bar the bubble.

Of the forgotten Burrhus, who wrote among other things about wine which turned into vinegar, Atkinson gives the following "Shandyean" introduction to some quotations:

> I produce this man as (like myself) one of the hobby-horsecal writers; who, when he gets once mounted upon his subject, be it fish or flesh, right or wrong, is not to be stopped. He starts with the "Epistola de cerebrovanae variae," one-fourth of which he at once resolves and dissolves, *praeter speciem,* into fat: fat! Do brains of gross feeders all turn into fat? no wonder at their wisdom. *Ex Cerebro enim balaenarum spermaceti optimum eructari.* Very like a whale, though true. In such prolific manner he continues to give a sketch, and to delineate the physical adaptation of parts, and the infusion of soul.

One of the writers who imitated the style started by the unappreciated John Mayow is Barberius, who wrote a book entitled "Spiritus nitro aëri operationes in microcosmo," which recalls somewhat Mayow's "De sal nitro." Atkinson says:

> From this charm, he spells up the fermentation and digestion of food; and from such gross matter creates and sublimes at once the animal spirits. How progressive is the intellect of man, and how consequent are the deductions and inflections of philosophy! Barberius forms a body, and from the body a soul. The stomach his receiver, the pabulum his coagule, the animal chemistry his nitrous spirit; from this spirit a vapour, from vapour the invisible ether, or sublimation, into soul!
>
> Is this process of Barberius an actual creation, or the fiction of creation? Mayow had gone before him. Will it not be all as one to us, "one hundred years hence?" And yet theory is a delightful and flowery path.

A few of the pithy sayings may be grouped together here with little or no comment on their context:

> Genius sometimes travels by a slow coach, as well as a quick one. The quick coach is occasionally overturned, and leaves the traveller helpless upon the road. "Chi va piano, va lontano." . . .
>
> Bencius was deemed an *eruditissimus homo,* although branded as a Charlatan by Conringius. How so? What constitutes a Charlatan in Medicine? A half concocted man; who, by puffing, advertising, false pretences, undue applications for business, impudence and falsehood, attempts unduly to cut the grass under the feet

of his colleagues. Have you seen such an one? Yes. What, in your town? Yes. Quacks in all towns. . . .

This author, Bottonus, resided at his native town of Padua, and must have had some brains. He is said to have died very rich, nay immensely rich. He had many fine houses over his head; but did not trust to the old adage:

> When Land and Money are gone and spent,
> Then learning is super-excellent.

Had we not therefore better appropriate the reverse to him, thus:

> When Learning fine is gone and spent,
> Then, Money is most excellent! . . .

We Roman Catholics are much obliged to Mr. Bzovius, as producing for us characters "Sanctorum, professione Medicorum"; that is, of the medical tribe: which no other medical tribe can produce. Even Harry VIII, that great defender of the faith and monster of a saint, could not have done half so much; nay for his favourite old Butts, had he wished it. There is then, some comfort for us Papists; seeing, that amidst all the abuse and persecutions we are obliged to endure, yet, we may be canonized, in despight of our betters, And by Jove, as times now appear to be going, perhaps, as appointed Constables in the Parish of all Souls. . . .

The history is of the Prussian who let a knife slip into his throat, and swallowed it. He recovered after it had been cut out of his stomach. This will set my mind much at rest, when I occasionally go to a dinner party. The greediness of some men, who are dining (but not at their own expense) makes me sometimes tremble lest the same accident should happen to them. It may remain, however, a surgical question, whether the knife, if let alone, might not have cut out its own way, at less cost and less jeopardy.

Of the "Pleuropneumonia" of Baronio:

How this work must have made the grand Phlebotomist's and Lanceoto-mist's fingers itch. Oh! *la sainte saignée!*

What sort of a mind Bruno had, and how stored, his works must tell. To judge of him by the portrait which I have (*borribili visû*) he had by no means a sweet-bread pancreatic face, but was apparently the ugliest Doctor in Christendom. The painter must have had a pique against him; for any painter may, if he chooses, bedaub over even an Adonis most wretchedly. O that we had made ourselves, what a handsome fellow I would have been!

Every dog hath his day; so had Bartlet. I shall venture my opinion in cases where farmers are on the jury. They always prefer the cheapest treatment and the cheapest Doctor. I cannot call them fools, because fools and their money are soon parted.

The subject of collecting portraits of medical men is one of importance and in it Atkinson took considerable interest. In his conclusion[11] [already quoted in this article] he expresses his views on the subject.

And now that we must take leave of this dear old York friend, I feel as if I knew him intimately. The two quotations following close the last article of his book and the volume respectively:

It will behoove me, in common, to apply a passage, extracted from the sixth Book of the Epistles of Saint Ambrose, "For you shall rarely find a man who is not deceived by his own writings."

But a man's book is to him either like a legitimate or natural child: for however heterogeneous the constituting materials may be, or have been; the parent usually clings to his offspring for better or for worse, from natural affection: and retains to the last a selfishness of respect for it, which nature also dictates and he adopts.

The little essay on "Bibliographical References" is a refreshing piece of writing which I think worthy of reprinting in full:

BIBLIOGRAPHICAL REFERENCES

From the relative Histories of Bibliographia and Bibliomania, which occasionally have run *pari passu* through this recital; a few of the acknowledged advantages and mysteries of dupism, even in medical books, may be attended to with advantage by the student.

And I must put the reader on his guard, as I may sometimes have deceived him typographically, in regard to these books, *exempli gratiâ,* where *editio princeps* is attached; he may not always find that I have adhered, perhaps, to the strict letter of the law; which should bind such a cyphering to the first and precise edition from an ancient MS. Such notice may occasionally refer only to the *Ed. Pr.* of a town; no uncommon occurrence in the printing of a book. And, perhaps, I may, from ignorance or neglect, not have noticed such a case. Therefore, I would advise the student, for whom alone I write, to keep a strict and correcting eye over me.

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[11] *Vide* p. 203.

In his book-buying, or investigating career, he should have in mind these observations, to which every bibliographer alludes; lest in some instances he should lose, or sell, or not purchase valuable editions. It is an art of itself, which is not easily sought into, or acquired; but which, if so acquired, may stand both his pleasure and profit, in very great stead, in a very long, or a short life.

Bibliographers inform us, that Greek editions in capital letters, or *litteris majusculis* (so called), must not be thrown away if met with. Nor must the student fail (if he can afford it) of buying them, if tolerably reasonable, as their value is certain. Books of British production in black letter, of an early date, in his own profession, must not be carelessly committed *ad focos*.

Books with false titles and title pages, exist amongst medical books, as well as amongst others. Of this the student must be aware: and, unless as a matter of curiosity, are worth nothing.

Editions of 1400, or early in 1500, whether the student can read, can understand them or not (especially if he be assured that they are medical books) must not be sent by him to the shops, where old books are bought; or exchanged without a caveat.

From the few cautions above, and from others, which, being extremely good and amusing, Horne, Dibdin, *et similes* will supply; he might learn to avoid the stumbling-block, over which blockheads usually stumble.

Many difficulties present themselves, not always amenable to every intellect, in the development of literary incidents. A man may perceive these, without being deep in the mystery. For instance, it is not easy to understand clearly, the titles which are marked by abbreviations, or designated by initials; and especially, as they occur chiefly in early printed books. For these books may have been almost forgotten, in a parallel and indefinite line of time. And if there be not some succeeding commentator, how is an enigma, such as L.M.N., to be satisfactorily made out? I have frequently laboured much in mind and body, to enucleate the Gordian knot of initials; and with little success. And when I perceive that even men, the most highly-qualified by classical and extraneous literature, such as Dibdin and other bibliographers, are occasionally free to acknowledge this difficulty, I sit down, if not in comfort, at least in acquiescence. For I frequently find, that almost all these authors who have transcribed and repeated such enigmatous initials (like myself) have given them again sole and naked, in *statû quo*, as they found them.

It is a very arduous, and not always an attainable, point, to become acquainted with all the editions of a book, and to know or decide which of them is the best. An investigator must frequently either borrow something from others; must take for granted, or confine himself for months, to the reading of an original of one author and his work; or confess, that, as a critic, he had affixed his signature to the work, rather prematurely.

If the student, for instance, be dabbling a little with Averroës' Commentaries only, and fancies that in his inferences he may have followed his author pretty successfully; and has accorded generally with him in his elucidations, but yet is given to understand that Ambrosius, of Nola, e.g. can confute them; in what state of physical force will the student's sensorium be left, when he has waded only through sixteen fresh books of logic, and thirty of physics; in which Ambrosius has ingeniously contrived to compress his proofs of the inaccuracies of Averroës? Can he after all satisfy the criticism of the scholar, whether all these books and conclusions of Ambrosius are good, bad, of indifferent?

How did Fabricius feel when he had completed, only, the one hundred pages of his second volume, in ascertaining and enumerating merely the remains of Aristotle? But how would he have felt, had he, as a scholar, been obliged on scholastic duty, to comprise or detail, and in scrupulous detail, the respective subjects of all Aristotle's works? I doubt not that for a short while, his literary stomach would have been somewhat tartar-emeticised upon the occasion. And setting aside also, Hippocrates, Galen, Avicenna, Albucasis, or, the twenty-one folio volumes of Jammy's barbarous Latin, which he has formed or composed, alone from the works of Albertus: or even, the mere examination of all the editions of Aristotle and his commentators.

There is besides, amongst others, no small author, named Haller (the very sight of whose magnificent works produces Cephalalgia) who would also take somewhat of the crusading spirit of bibliography out of us; and convince us, that a man may in some measure be excused for not affecting to have read over more than once, the books which he may venture to criticise; or at least to identify.

For my part, although my sacrum and crista Ilei, are no harder, or become more cartilaginized by book-incubation and study than my neighbours, yet I have known the time when a very thin old black-lettered book has made my dull bones ache most confoundly; and after all, to very little purpose, and much less entertainment. And I should, out of mere curiosity, like much (in due, very due, time) to possess Mr. Dibdin's Ossa Ischii, for my museum, as a vermin specimen of a literary incubator. By this sort of industry, however, we are taught to understand, that the duties of a critic, even to a competent sitter, are not so easily accomplished as "le moyen de faire èclore"; or, by hatching fresh eggs in a graduated oven. By proper inquiries, an aspirant may make out, the great points in such cases, how to store his mind, refine his taste, and improve his judgment. For a man may employ himself in reading the whole of his life, and may raise a mountain of literature, which, if suffered to waste its fragrance in the desert air, or to accompany him into the grave, as ashes to ashes, and dust to dust, will have had no better effect in society, than to have occupied the place of a more useful creature. Whereas, by offering a sketch of his fancy, or by embodying his mind through the medium of the press, the merit of his experience will be felt; or his errors be corrected. But should an instance of rare mind be fortunately developed by accident, or an exquisite trait of fancy be delineated, such a loss would have proved irreparable.

On this ground a man may almost be excused for pushing even his crudities into public; as I have done mine: or may be forgiven, if, in the contemplation of his profession, or in the prurities of his taste, by venturing to publish, he may give a lucky cast of the die to private lucubrations.

In the evolution of my stinted catalogue, in the order of editions, their merit or type, how they may have been rated or executed, will fall little upon my shoulders, as I have before explained; because, I have usually consulted, and generally built upon, the information of other authorities. The distinction and identification of such questions, more properly belong to the history of literature, or of printing. I have endeavoured merely to notice some of the editions; occasionally to attach a few remarks, to which my short preface alludes. These may probably have been suggested by other authors, or by chance exhibited by myself. It is too laborious a process, and too hazardous an undertaking, to grasp a foil, seriously to defend the one or the other. And, I must observe, that where I have deceived others, I have myself been deceived; and, to produce such literary items and circumstances, in strict accordance, and in the extreme of accuracy, would require an extent of time and of perseverance, not to be expected from the life of man. Mine is, therefore, to be considered, in one word, or two letters, as a very limited and special bibliography, of a few authors in my own profession. It is on a scale only commensurate with stinted hours of relaxation. What blockhead but myself, would have chosen such a subject for relaxation? Had I attempted to write pretty sonnets to a mistress, or doleful ditties to a wife, or lies of any kind, they might have been amusing; or possibly, had my intellect been matured in a happier clime, had it inhaled some of the sweet sopors, or imbided any of the delicious affluxes of the divine authors, my effusions might have been more grateful to my readers. But these I resign to poets, or maniacs. And a man whose hours of pastime have been smothered in old types and musty catalogues, may well excuse the public, if they place him in the original catalogue of original fools. Should the reader prefer a dry scanning nomenclature, he may be content with part of mine, and leave the wild-fire of the work to consume itself. But we are told by chemists, that azote is passed off by the kidney; bile by the liver; and carbon by respiration; whilst choler and spleen are vented by the tongue; and, let me add, human patience by human bibliography. Perhaps the edifying seniors of the profession (one of whom I am) may apprehend, that it were more becoming in a man of my age (past forty) to knit the brow of gravity in his history more than I have done. But when they shall recollect, that the best chronologists have certified, that Methuselah was only weaned at the age of sixty: a longer ebb and flow of natural spirits than usual may be granted to some men, for the exercise of their learning, or facetiae. Playfulness is an attribute of youth; and he who is caught playing, may be presumed to be young. The kitten is scarcely midwifed into day before she plays; she is frisky at the year's end, but ere long is tributary to the laws of nature; she maddens downwards, and at last, like some of us old doctors, is turned into a Tabby, or into a cruel old cat.

I have nothing now to add but my appendicula, my cauda, my finale, my tail.

Every monkey has not a tail, or caudal portion. Therefore, according to modern theory, there must have been a failure in the small branch of my coccigeal or sacral artery. And it may aptly apply "There is a tale to tell of thee," although thou left not a tail behind thee.

I have been sporting, in this ephemeral, this puerile, this senile, this A.B. two-letter life; and mingling most absurdly, false glimmerings of light and spirits, with heavier masses of graver science. I have attempted combination incompatible with nature; until the deep responses of offended conscience start back upon me, and beg for quarter.

My attempt must prove to be, like that of the foetal circulation in the A.B. months of its first existence. I have been obliged, in my own defence, to cut and delve a shorter biographical route, a "canalis venosus et arteriosus." By which I might practice a nearer way, at least my way, to an extended medical bibliography. I allude to that expanse of subject, which nothing but detailed records and ample space can supply.

Bibliography, to be perfect, will require, that all the vessels of the extremities of science shall send their tributary streams to the heart, before it can dispense its benefits at large.

To this end it appeared to me advisable, to expatiate occasionally somewhat upon our subject, by collecting materials, nearly ad hoc tempus; and arranging them quoad vires, under separate heads of authors. This, if seriously contemplated, and gravely done, might lead to a more than imagined degree of perfection.

Unworthily as I may have fulfilled these two grave edicts, another person perchance may take it up, and supply my deficiences. And if (as old writers occasionally express) the marrow of my short industry, he collected from my bones, it may possibly, at any rate, afford a grain, though of meagre nutriment, to bibliography.

Every man has his humour, and he acts "par son humeur, ou de son sentiment." God apportioned our intellect, *sua sponte*. Thoughts arise, we know not how. Such as they are, we must use. It is, however, possible, by attention, to improve them. I am not the sort of fellow, to undertake to write a sentimental journey; and, therefore, wanting better amusement, and through mere incident, I stumbled upon the dry, dusty, tedious, accursed, hateful, bibliography. It may, perchance, mollify duller than ordinary hours. It may kill time more circuitously, than in a direct manslaughtering way. And in a degree, which, if enforced, would kill the devil. But of profit, it is seldom productive. Should only one reader, even a destitute Unitarian, upon the occasion, honour my pages with his patience; this patience may inform him, and to his cost he would learn, how much or how little of this virtue may be required to effect the smallest impression upon a legitimate rock of literary granite: in distinction, to the task of his patience, in wading through the alluvium of my nonsense. And yet unless his instrument or perforator be smeared with a drop or two of the balsam of nonsense, he may labour through his days, and labour through his nights, but will never drill through the impenetrable medium of a dense and dolorous cloud of bibliography. He must at length be contented in concluding with me that bibliography is a doleful ditty. Or as Lambinet has it, "on ne peut se dissimuler que le plupart des ouvrages bibliographiques ne soient d'une sécheresse soporifique," (snort and echo) soporifique!

OUTLINES OF THE HISTORY OF MEDICINE IN LOWER CANADA

UNDER THE ENGLISH RÉGIME

By M. CHARLTON

MONTREAL, CANADA

(*Continued*)*

AFTER the conquest of Canada in 1759 by General Wolfe, tranquility was restored. Commerce and agriculture, which had been in a low state under the French, were given an impetus. Quebec, gay and brilliant in the early days of the nineteenth century, was astir with enterprise. There was much talk of literature and art, and there was even a project planned by Lord Dorchester in 1787 of having a university. This unfortunately did not materialize as the Roman Catholic bishop, Monseigneur Herbert, was not in favor of the Governor's scheme.

Printing was only introduced after the conquest (heretofore all books had been brought over from France) and was commenced at Quebec in 1764. On the 21st of June the first number of the *Quebec Gazette* issued from the press. This paper was the second paper published in Canada. Before printing was introduced a number of manuscripts on general subjects had been written and circulated among the authors' friends. Unfortunately many of these manuscripts have been lost or destroyed.

As the British settled in the country English doctors started practicing there. At first quite a number of the surgeons attached to the army retired and settled in the towns, where they engaged in private practice. Most of these were well-educated, capable men, whose services were in great demand. Later not a few came direct from Great Britain, to settle in the new country as practitioners. Canada had scarcely recovered from the effect of the conquest when the American Revolution broke out, and once more war devastated the country.

As late as 1782 Upper Canada was a wilderness, with the exception of small clearings around the forts. Roads through the country were little better than trails. Swamps abounded. Bridle paths marked by blazed trees ran through the forests and led often to small clearings. Furniture in these early settlement homes consisted of weighty hewn bedsteads and tables, with one or two chairs. When the British Government was confronted with the problem of finding homes for over fifty thousand refugees from the revolting Colonies, it turned its attention to this great wilderness. The history of Upper Canada as a distinct province began in the year 1791. Previous to this date it had formed part of the Province of Quebec. Full legislative power was given to Upper Canada by the Constitutional Act. The first refugee loyalists arrived in the summer of 1784 and the hardships they suffered were frightful. Hunger and exposure caused much loss of life among these brave pioneers. Many had come from wealthy homes and were totally unused to work. No one will ever have the slightest idea of the misery they suffered in the wilds of western Canada. By the winter of 1785, however, they had built themselves rude shelters and better times followed. In 1794, they were in a position to furnish most of the supplies for the troops. Potash, grain and pork were sent to Montreal. In this manner the Upper Province became settled, first by soldiers of the disbanded regiments and next by the United Empire Loyalists.

It is a noticeable fact that in all this large number of refugees there were very few doctors, for the reason that, although many of them were ardent Tories, they were not banished from the revolted Colonies as the rest of the people were. Their services were too much in demand. The few doctors who were banished settled in New Brunswick or Nova Scotia. Not a few of these loyalist doctors left behind them shops filled with drugs and medicines which were confiscated by the Revolutionists for use in the army.[1]

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* Parts I and II were published in ANNALS OF MEDICAL HISTORY, V, ii and iii, 150–174, 263–278.

In an interesting pamphlet[2] Dr. D. A. Campbell states:

> Among the twenty-five hundred settlers who came to Halifax in the year 1749, there were twenty-eight medical men, eleven of whom had their families with them. These medical men were given a free trip and a grant of two hundred acres of land. Some found employment in connection with the hospital which had been established, but this did not last long, as the home authorities complained to Cornwallis that he supported too many surgeons and apothecaries. Only three out of the twenty-eight appear to have had the courage to face such a future. These remained with the other colonists, shared their hardships, and achieved some measure of success. The names of the three were Robert Grant, John Steele and Alexander Abercrombie. These were the pioneers in medicine in Halifax. Grant became a member of the House of Assembly; and Abercrombie when he died twenty-eight years later was deeply lamented both for his medical skill and his benevolent disposition. When the one thousand five hundred German colonists settled at Luxemburg they only had with them one medical man. As in other places the surgeons belonging to the garrison looked after many of the settlers. After the founding of Halifax, about nine-tenths of the physicians who came to Nova Scotia, came from New England, and of the thirty-five practitioners in 1790 fully three-fourths were Loyalists.

In 1828 an act was issued to regulate the practice of medicine. In 1856 another act was passed by the Medical Society of Nova Scotia.

As the colonists began to settle in the Upper Province of the country, they experienced untold hardships for want of medical attendance, as the only doctors within reach were those stationed with the garrisons at Kingston, Niagara, and Detroit. The Military Hospital at Kingston was for a time used by Sir John Johnston for the storing of Indian presents but was afterwards restored to the town for its original purpose.

An old woman in the next clearing was chief physician to the surrounding country.

ADAM MABANE, M.D.
(Appointed Head of the Military Hospital by Governor Haldimand)

> A tree fell one day and hurt mother's back very much. We sent for the old woman who came, stuped some wheat, made lye, and applied very hot in a flannel. In a short time she was as well as ever.[3]

Quacks began to overrun the villages and towns. Most of them came from the United States with wondrous pills and powders for sale. Alas! for the unwary ones who were beguiled into buying their nostrums. Many did not require a second dose as the first was often sufficient to kill two men. Calomel was one of their favorite remedies. It was given in such large doses that frequently a person already reduced to great weakness failed to recover from the drug. To put a stop to the abuses which overran the country it was judged necessary to legislate on the practice of medicine. This was done under the administration of Lord Dorchester in the year 1788.

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[1] Other loyalists came to Quebec by way of Lake Champlain and the Richelieu. Quite a number settled at Sorel, then an important district, where they had an able and wise protector in Governor Haldimand, who has sometimes been called the founder of Ontario.

[2] Campbell, D. A. The growth and organization of the medical profession in Nova Scotia.

[3] Reminiscences of Mrs. White of White's Mills near Coburg.

The Governor and the Legislative Council issued edict 28.[4] This was an act "to prevent persons practicing physic and surgery within the Province of Quebec or midwifery in the towns of Quebec or Montreal, or in the suburbs thereof, without a license first having been obtained." "An Act or ordinance passed by the Council of Quebec, 1788, forbidding anyone to practice without a license from the Governor, which license was to be granted without an examination to all graduates of any British University and to all surgeons of the army or navy." But this was largely a dead letter in the newer parts of the colony.

The Act also stated that the "license shall be granted but upon certificate of the person applying for the same, having been examined and appointed by such persons as the Governor, or Commander-in-Chief, for the time being may have appointed." Under this Act boards of district examiners were appointed yearly for each of the two districts of Quebec and Montreal. A very full account of the boards which followed these early ones has been written by Sir William Osler.[5]

The great advantage of these boards can be realized when one considers the numerous quacks and so-called doctors who applied for licenses. Many of them had never been inside a medical college, others had no knowledge of Latin, while others, with a certain knowledge of medicine obtained from medical books, had never dissected. In the country places matters were deplorable, as the so-called doctors were utterly unfit for their duties. Some of them had been connected with the Hessian troops, where they had performed the minor duties of dressers and similar occupations.

These Acts were necessary to keep down quackery, which every year increased in extent as the demand for medical attendance grew with the increasing population.

In 1795 the Provincial Parliament of Upper Canada passed an act[6] forbidding the sale of medicine, prescribing for the sick and the practice of physic, surgery and midwifery, by any one who had not obtained a license. This act was repealed in the year 1839 and the members of the Board were formed into a corporation to be known as the "College of Physicians and Surgeons of Upper Canada," of which the members were to be fellows: all other persons then or thereafter authorized to practice physic, surgery and midwifery were to be members of the College, and the College was to license. Women might practice midwifery and those holding a diploma or license from any British university or from any college or faculty of physicians or of surgeons in the United Kingdom, and also all army and navy surgeons, should receive a license.

In the year 1840 the former act came into force again and a new board was formed.

The names of Charles Blake, George Selby and Jean Jobert frequently appear as signatures in the old documents as the Examining Commission appointed under an Act or Ordinance of the Governor and Council of the Province of Quebec: "To prevent persons practising physics and surgery within the Province of Quebec and midwifery in the towns of Quebec and Montreal without license."

Montreal was often visited by traveling so-called physicians from the United States who on their arrival in the city would put up at some inn or boarding house and then advertise in the papers. The following appeared in the *Gazette*, Dec. 31, 1910.

> At Mr. St. Dilon's Hotel, No. 4 St. Sacrement St., Dr. Hart most respectfully informs the Ladies and Gentlemen of this city that from the encouragement which he has heretofore experienced, and the reports made in his favour by those whom he had the honour to attend, he

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[4] George III, chap. 8.

[5] Osler, Sir W. The growth of the profession. *Canad. M. and S. J.*, Vol. XIV, 1885.

[6] George III, 35.

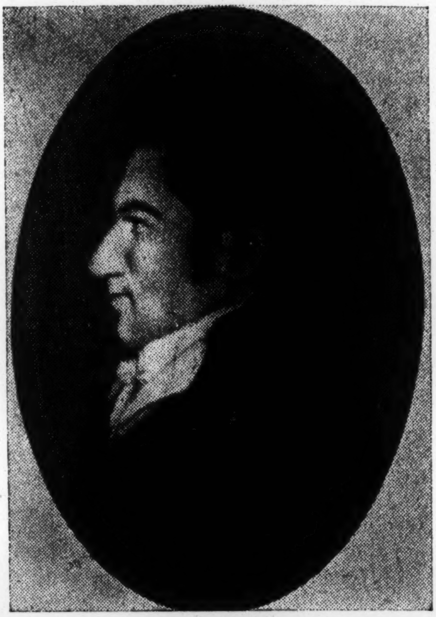
proposes to stay a few more months in Montreal. He professes an entire physical and chirurgical knowledge of the teeth and gums, and the different diseases to which they are subject, their causes, etc., the most suitable, as well as the experience and mechanical practice of extracting, filing, cleaning and fixing artificial teeth, which look as beautiful and are as useful as though they were natural. Dr. Hart flatters himself if that person who will honour him with his visits, will find in him an uncommon practitioner, either in extracting or fixing teeth in a natural state, or enamelling artificial teeth and fixing them firmly, after the new manner. He will be at the service of the public during the time above mentioned from ten o'clock in the morning till three in the afternoon.

N.B. He has no objections when required to wait upon ladies at their residences.

Then follows another long advertisement of an "Improved Patent Spiral Truss," which Dr. Hart has manufactured. Dr. Flagg, from Boston, staying at Dilon's Hotel also advertises his services as surgeon: "His mode of practice is not common, but very simple, safe and easy."

At the beginning of the nineteenth century, pathology, physiology and chemistry were in their infancy; operative surgery was in advance of medicine but the mortality and suffering were frightful. The favorite remedies of the eighteenth century were as yet freely used: bleeding, emetics, and the use of mercury. Bleeding was *par excellence* the favorite remedy for ills, so that the lancet was always in use. The constitution of the people must have been much stronger at that time than now to have stood the loss of so much blood. If the doctor failed to diagnose he bled his patient; if at times he hesitated to do so, the cry was sure to be "bleed him." Bandages and a bowl were handed to the doctor as a usual thing in a sick room. A curious relic which had been brought from France was found by Dr. Douglas in that famous old Mountain Hill House, long the abode of members of the medical profession. This was a black cross which the former occupants used to hand their patients when they bled them.

Dr. Blanchet was one of the first doctors to publish medical works in Canada. His first work was published in New York in 1800, and was called "Recherches sur la médecine, ou l'application de la chimie à la médecine." Later he brought out another work entitled: "Is Typhoid Fever Contagious?" In view of recent light on this subject his work showed great originality. Dr. Blanchet also published a pamphlet of forty pages called, "Appel au parlement impérial et aux habitants des colonies anglaises dans l'Amérique du Nord sur les prétentions exorbitants du gouvernment executif et du conseil legislatif de la Province du Bas Canada." He was very much interested in the movement for the spread of education and wrote the first law on education.



FRANÇOIS BLANCHET
(1776–1830)

The medical profession, as we have seen, was not behind in the advance of the times. Besides Dr. F. Blanchet others were bringing out medical works. Dr. Michael Underwood, who was a graduate of the Royal College of Physicians of London and who practiced at Quebec, published a work entitled "Traité des maladies des enfants" in 1789, and in 1826 Dr. Pascal Taché published a work on "Studies in Hygiene and the Development of Physical Strength." The numerous diseases, or rather plagues, sweeping over the country at this time prompted Dr. Taché to bring out this work. He also published a number of pamphlets on various other subjects. The Board of Immigration authorities published "An Act for the Relief of the Indigent Sick Emigrants" in 1823. Such were some of the first ventures in medical literature in the beginning of the nineteenth century in the old city of Quebec.

In 1789 Dr. Pierre de Salles Laterière had published at Boston a thesis on "The Use of Pure Nitric in Whooping-Cough or Asthma," by Dr. Thomas Arnoldi (date unknown). In 1812 "Extracts from a report of the Massachusetts Medical Society respecting a disease commonly called spotted or petechial fever, which has within a few years been epidemic in various parts of New England" was published at Montreal, followed in 1819 by John Tindall's book, "On Observations on the Breeding and Management of Meat Cattle" together with a description of the diseases to which they are liable.

In 1806 Dr. Blanchet, with four other French Canadians, founded in Quebec the first French newspaper in Canada. It was named *Le Canadien*, and had for its motto: "Nos institutions, notre langue, et nos lois." The proprietors of the paper were all active and somewhat troublesome members of the House of Assembly and it followed, therefore, that the columns of this newspaper were devoted to the French party and began to appeal to race prejudices. This helped to widen the breach between the two races, which unhappily at this time was beginning to show itself. Before this the French and English dwelt in amity, and in the subscription list of 1799, which was raised in Canada to assist the British in their war with France, many prominent French names appear. The growing discord was urged on principally by Louis Joseph Papineau who by 1827 through his inflammatory libels and the wonderful way he had of playing upon the "heart-strings of the people" had become their leader.[7] In that interesting book, "Trifles from my Port-folio, or Recollections of Scenes and Small Adventures during Twenty-nine Years' Military Service," by Walter Henry,[8] staff-surgeon to the 66th Regiment, he mentions that he was at a dinner given at this time by Lord Dalhousie, and that he heard Lord Dalhousie say: "Mark my words, Gentlemen, that man is a political incendiary whose ambition will never be satisfied until he has hopelessly embroiled this Colony with Great Britain." Dr. Henry furthermore tells us that one of the burning questions brought against the British Government was the occupancy of what was formerly the College of the Jesuits, as a barracks by the troops. It was used for this purpose until happily seized upon by Papineau as a fine plea for abuses. It was the French Ministry under the Duc de Choiseul, however, that had driven the Jesuits from France and her Colonies. The state of the government was a particularly stormy one under Sir James Craig and such complications arose at this time as were afterwards to find vent in the Rebellion of 1837. Eight months after the arrival of Sir James Craig, Blanchet and his four friends were dismissed from the militia on the ground of being "proprietors of a seditious and libelous publication."

In 1810 their paper was seized by the government, and two days later three of the proprietors, namely Blanchet, Bedard and Taschereau, were arrested at Quebec. This proceeding was due to the advisers who surrounded Sir James Craig, for although these men had given a great deal of trouble they were by no means traitors. Blanchet and Taschereau were discharged from prison in July on the plea of ill health.

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[7] A society was started called "Fils de la Liberté"; secret drilling went on at St. Charles where a paper was published called *Echo du Pays*. Nothing too bad could be said against the English.

[8] Dr. Henry was Inspector General of Military Hospitals.

In 1812 we find Dr. Blanchet made Chief Medical Officer of the Provinces. Dr. Blanchet was only twenty when he was imprisoned. Young and impetuous he had been led astray by others. Very soon we find him settling down to his profession and gaining the esteem of all who knew him. Outside of his profession he advanced the cause of education among the people and established the Canadians on Crown lands opening up west into the back settlement. He also endeavored in every way to promote a better understanding between the two races. Dr. Blanchet was born in 1776 at Saint-Pierre de la Rivière du Sud and took his medical degree in New York. Returning to Quebec he was given his license to practice in 1801. He died in 1830.

The prosperity of Canada under British rule was suddenly brought to a standstill by the second invasion of the Americans. The heroic behaviour of the troops throughout the long campaign, the hardships they endured on their long dreary marches, with but little rest and insufficient food, has been told in the histories of Canada.

Dr. Henry was a graduate of Dublin and London Universities. He entered the army as a medical officer and held many important positions. He was a clever man, as were so many of the surgeons belonging to the British Army, and like Dr. Douglas we are indebted to him for many a vivid picture of the times he lived in. Dr. Henry attended the Montreal General Hospital for four years. He writes: "I never witnessed more scientific or successful practice than in this establishment, several of the surgical operations would be applauded in London, Dublin or Edinburgh."

Dr. Henry's son was a student at McGill in 1856. According to the late Sir William Denan, in speaking of medical education at the McGill Medical Faculty, Dr. Henry said "that on the whole they would bear a favourable comparison with any institution on the Continent, or Great Britain, and that he had heard the Director General of the Army Medical Department say the young graduates at McGill were among the most promising of the medical officers under his superintendence. There is a select library for the students at the College. The character of medical education here appears to be more justly appreciated but the Faculty of Arts still have but few pupils. But a gentleman of great ability and high character and diversified attainments has lately been appointed principal on purpose to reside in the college."

The following note of the services and appointments of Dr. Henry is from Hart's Army List for April, 1855:

On full pay, 44 years.

Appointed Hospital Assistant, 11th April, 1811.

Assistant surgeon, 19th December, 1811.

Regimental surgeon, 8th June, 1826.

Staff surgeon, 4th January, 1839.

Depr. Inspector General, 16th December, 1845.

Inspector General (in Canada only), 12th March, 1852.

He also served with the 66th Regiment from May, 1811, to close of war at Toulouse, including last siege of Badajoz, Battle of Vittoria, and action in Pyrenees, Battle of Nivelle and Nive, engagement at Garris, Battle of Orthes and action at Aire.

He was given an honorary degree by the McGill Medical Faculty. Several papers written by him appear in the *Medical Chronicle.*[9]

He served also with the same corps in the Nepaulese war in India, in 1816–17, and in the two Canadian rebellions, 1837–38.

Dr. Henry was present with his regiment during the last four years of the life of Napoleon, and after his death was charged with the duty of preparing the bulletin of the post-mortem appearances of the body, which was published by the British Government. He received the war medal with six clasps.

One of the most memorable of these marches for heroic endurance was made by the 104th Regular New Brunswick Company. They tramped from New Brunswick on snowshoes. Frostbitten, exhausted, suffering from a scarcity of food they kept on their way through the great wilderness. Over mountains, hills, and swamps they tramped, till finally they had overcome what at first seemed a hopeless task. Following them came three captains of the Royal Navy with five lieutenants and a few seamen. When they finally reached Kingston they were the first to take charge of the small fleet.

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[9] Vol. 1.

The illness of the troops during the war of 1812, is set forth in a book written by John Douglas, assistant surgeon to the Eighth Regiment. It is called "The Medical Topography of Upper Canada," and was brought out in 1819, two years after the author's return to London. The book is dedicated to Sir James M'Grigor, K.C.T.S., director-general of the army medical department. It is divided into six parts: The Topography of the Country; The Soil and Climate; The Services of the Troops; The Diseases which Prevailed; The State of the Wounded; and The Provincial Militia and Indian Nations who Cooperated with the Army. Dr. Douglas in referring to the Campaign of 1814, says:

> The active services of the troops were continued for a period of nearly three years. The campaign of 1814, which preceded the ratification of peace in the following Spring, was rendered important by the successful achievements of the army. Being stationed at York in charge of the general hospital during the greater part of that year's campaign, a favourable opportunity was afforded me of witnessing the state of the sick and wounded who were sent thither from the army. That part of the province, I may observe, which stretches from Fort George to Fort Erie, was the principal field of active operation. After the several actions which were fought in that tract of the country, the wounded were immediately conducted to the rear as far as Fort George, from whence they were shipped on board small vessels, conveyed across the western extremity of Lake Ontario, to be landed at York, and admitted into hospital. On the evening of the second or third day after an action, they generally reached their place of destination. After the battle of Chippawa, which took place on the 5th of July, a considerable number of wounded were disembarked at York, and admitted into the Hospital. Sufficient accommodation being afforded them, the routine of medical duty had not as yet met with any obstruction. The battle of Lundy's Lane, which was fought on the 25th of the same month, being more sanguinary than that of Chippawa, filled the general hospital at York, and its adjacent buildings with its numerous wounded. After the latter period the duty of the medical department, not only at York but along the Niagara frontier, became serious and laborious. The skirmishes and casual engagements which occurred during the remainder of the campaign, kept the hospitals more or less filled with wounded till the beginning of winter, when the enemy, evacuating Fort Erie, passed over the river Niagara to the peaceful possession of his own territory. Our troops, though opposed to a force much greater in number, generally maintained their ground; and in almost every encounter had the scale of victory on their side.[10] The task, however, is not mine, either to applaud the well-conducted enterprises of an army, or to censure those precipitated measures, which, in their fatal consequences, often obscure the brightest prospects of success.
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> The general hospital at York, though a commodious building, was deficient in size for the accommodation of the sick and wounded. Its apartments, being originally intended for family use, were too small for the wards of an hospital, and did not admit of a free ventilation. Neither were the adjoining houses of the hospital, which were fitted up for temporary accommodation, any way suitable for the reception of the wounded. When, in the course of the summer, the wounded became so numerous as not to be contained within the general hospital and its outhouses, the church, a large and well ventilated building, was dismantled of its seats, and, for the time being, converted into an hospital. Having made these preliminary remarks I shall now proceed to give an account of the state of the wounded, which is to be understood as referring solely to the campaign

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[10] The number of regular troups in the Upper Province did not exceed 3500. The American force was always double that number.

of 1814, by far the most important epoch of the war in Upper Canada.

Many of the wounded were debilitated from severe service, and had also suffered from the endemic diseases of the country. Their constitutions were not, therefore, in a state well adapted to make reparation for the loss of substance occasioned by serious injuries. Neither were they in a favourable condition to undergo those formidable operations which are too often the last resort of surgical interference. The sultry season of the year, and the confined apartments of an ill-ventilated hospital, militated much against the recovery of the wounded. These untoward circumstances did not fail to excite many painful apprehensions in the minds of those who felt anxious for the welfare of the soldier.

The constitutional fever attendant on severe injuries, was evidently modified by the influence of climate. It partook of a remittent character, its period of attack depending upon the early or late appearance of local inflammation. In a few instances the remissions of the fever could be traced; but for the most part they could not be distinguished. Exacerbations often came on without any previous abatement of fever. Such, indeed, constituted the highest grade of the symptomatic fever. Sometimes the exacerbations were evidently connected with an irritable state of the constitution; at other times they seemed referable to the extent and violence of the inflammation, occupying the peculiar structure of that part which had undergone the solution of its continuity. A high state of constitutional fever, deriving its existence from the presence of inflammation, is not to be regarded in a secondary point of view. It is universally allowed to have much influence on the pain, heat and swelling of an injured part. To lessen the violence of its symptoms by a general antiphlogistic treatment ought, therefore, to be one of the principal objects of the surgeon. While his art is employed to subdue the febrile excitement in the system he may not only check the process of inflammation but may at times prevent the invasion of a fatal gangrene.

The symptomatic fever which accompanied wounds in the large joints, was often long continued and serious in its consequences. Such injuries, though apparently slight, sometimes put on a most alarming appearance. The pain was great, the surrounding parts became tense and tumefied. The coagulable lymph which was diffused through the cellular texture of the limb, and extending far above the circular border of articular inflammation, with the deposition of osseous matter, both in the joint and in the contiguous muscles, may be considered as the effect of a high and deranged state of arterial action.

In some of the wounded, when the constitutional fever had ceased to operate as a source of general irritation to the system, an attack of intermittent fever prevented recovery. This fever proved fatal to a great number of the wounded in the hospital. In some of the wounded, before death, its paroxysms were so slight in their accession, that they could not be distinguished from those which occur in hectic fever. A colliquative diarrhoea, alternating with intermittent fever, was at times the forerunner of a fatal termination. This fever undermined the powers of the constitution. Its effects on injuries, even of a trivial nature, were serious and alarming. The process of granulation was interrupted. The matter discharged from a wounded part became copious, sanguinous and bloody. During the intervals of fever a slight livid discoloration might be observed around the smooth or ragged edges of an injured surface. The surrounding integuments looked shrivelled, and felt flaccid to the touch. The lips of a lacerated wound were retracted on account of their adhesions before destroyed, or they appeared flat and compressed from the absorption of internal granulation.

There is perhaps no situation in which a medical practitioner can be placed, more painful to his feelings than that which affords him an opportunity of witnessing the effects of an obstinate intermittent fever spreading its ravages amongst the wounded. Cinchona, which had before been successful as a remedy in this disease, now seemed to lose its beneficial influence. In many of the men, the stomach had become so irritable from its frequent use, that it could not be given in that quantity which was adequate to overcome the fever. Thus its long continued administration rather tended to debilitate than to support the strength of a patient. As bark, in its different forms of preparation, had ultimately failed in the cure of the disease, it then became a desirable object to have recourse to the exhibition of other tonic medicines. Zinc was accordingly given in the form of a pill; but in no obstinate form of the fever did it either lessen the severity of the paroxysms, or suspend their usual period of accession. Charcoal in powder was next employed, as recommended by Dr. Calcagno of Palermo. To a number of patients a scruple of this medicine was given for a dose three times a day; but that quantity being found ineffectual, a tablespoonful was administered every four hours, without any better success resulting from the prescription of so large a portion. It proved serviceable as a remedy only in a few cases which were not of long standing. Fowler's solution of arsenic was found more effectual in the cure of this fever than any other medicine. Before it was administered, the stomach was emptied by an emetic, and the primae viae by a gentle aperient. Four drops of the solution were at first given three times a day and the dose afterwards increased as it was found necessary. In the course of four or five days many of the most obstinate cases of the disease began to yield to this preparation of the medicine. The arsenical solution, however, though in some instances given in conjunction with opium, could not be continued with safety on account of the irritable state of the stomach and bowels. It was therefore not proper to employ it indiscriminately in every case of the disease. Much caution was requisite to be observed in its administration. When given before breakfast it was apt in some patients to produce uneasiness in the stomach and griping in the bowels. Its specific effects on the constitution were always to be watched with much circumspection: The itching of the tarsi, the tenderness of the mouth, and the salivation which sometimes came on, contra-indicated in some individuals its further use. Convalescents from fever, to whom arsenic had been given, were more subject to relapses than those who had been cured by cinchona. It was, therefore, requisite, during the state of recovery, to give from time to time small doses of the solution. The good effects of this treatment were very observable amongst the men in the hospital. While their wounds put on a favourable appearance, they were less disposed to relapse into fever.

Many of the settlers in Upper Canada had nostrums for the cure of intermittent fever. These are for the most part composed of bitter vegetable infusions and ardent spirits, to which are added Cayenne pepper, nutmeg and other aromatic stimulants. They are exhibited in small quantities and at short intervals, before the cold fit is expected. Their operation, as far as I have observed, is always of a violent kind. They are productive of much sickness at stomach, heat of skin and ultimately throw the patient into a profuse perspiration, which often continues for the space of thirty-six hours. In this manner he becomes exempted, for a few days, from a return of his ague: The debility, however, which follows the operation of such mixtures, is often serious in its consequences. The constitution of the patient now appears to be more immediately under the influence of those causes which at first occasioned the fever. He again relapses into his complaint, which is not only more aggravated in its paroxysms, but more deeply rooted in the system. Such medicines, no doubt, have been found useful when taken early in the disease, but in cases of long continuance they have generally hastened the period of dissolution.

During the warm months of summer and autumn swarms of flies are often found in those situations where putrefaction is going on. To such insects an hospital, crowded with wounded, always becomes a desirable place of retreat. They come forth in immense multitudes, either impelled by hunger or by the instinctive impulse of their nature to propagate their species amongst those putrid substances upon which they live. That state of the air which favours the decomposition of animal matter, seems in a wonderful manner to promote their rapid generation. When the earth has been refreshed by warm showers of rain, and again heated by the sun; when the winds were still and the day or night felt close and oppressive, the succulent maggot appeared more immediately to be called into being. At such a period I have found numbers of them in the extremity of a stump, within the short space of twenty-four hours after the performance of the amputation. The fly in this state of its existence proved a source of much misery to the wounded. When maggots were found in a wound the matter discharged became fetid and offensive.[11] As they were employed entirely in feeding they often destroyed a considerable portion of the muscular substance of the part in which they had been brought forth.[12] In cases of amputation when they extended their course far into the muscular substance and cellular texture of the limb, they were the cause, not only of much local irritation, but of much constitutional fever. They consumed parts which were necessary to form a new bond of union. As a means of destroying them spirits diluted with water were injected into those situations which they occupied. Vegetable and mineral acids were also found useful in their extermination. But as they often lay concealed from the eye, in the deep sinuosities which they had formed, injections were not always successful in completing their destruction. From such places it was found necessary to effect their extraction with a probe. The ablution of a stump, or of a wound, with vinegar and cold water, was an excellent means of preventing their recurrence.

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[11] Douglas, J. Case of wounded bladder, *Edinburgh Med. & Surg. J.*, no. li, art. 5.

Those men who underwent the operation of amputation immediately after action, had usually a fortunate recovery. Though conducted in wagons to a considerable distance in the rear and crowded with other wounded on board ship, no fatal consequences supervened to the fatigues of their passage. But those men, on the contrary, whose limbs were amputated at York, at an after period, were placed under more inauspicious circumstances. Some of them had been subjected to much pain during the tedious gradations of their journey. Many of them at the moment of amputation were debilitated, either from the copious discharge of matter from their wounds, or from the previous existence of a high state of constitutional fever. The appearance of hectic fever, with its nocturnal sweats and colliquative diarrhoea, rendered some men unfit to support amputation. Hemorrhages which threatened life, and which art could no longer restrain, sometimes called for the immediate removal of an injured member. In many unfortunate instances, an accession of intermittent fever superseded the necessity of having recourse to amputation. All these untoward circumstances tended to convince the surgeon how dangerous it was in a number of cases to postpone amputation, even for a short time after the infliction of a severe injury. They taught him that in a country, where the wounded are liable to be attacked by those diseases which are endemic to the soil, and to suffer from the impure air of a crowded hospital, there are certain kinds of injuries which it would be improper to trust to the fortuitous efforts of nature and that, should he allow the first seasonable period of amputation to pass away, he would ultimately witness with painful accusation the fatal consequences of his ill-timed humanity.

The heat of summer was injurious to the well doing of amputation. By quickening the constitutional fever into a high degree of action, it prevented in some measure the process of adhesion. The boundaries of local inflammation were extended. The suppurating surface of a stump became large, the matter plentiful, and ill-conditioned. It was therefore requisite to remove the superficial dressings in the evening of the second or on the morning of the third day after amputation had been performed. This being done the patient felt relieved from the pressure caused by the bandages, and by the bloody ichor which had been effused in the extremity of the stump. On such occasions the cold lotion which was sometimes applied to the seat of inflammation, was effectual in reducing the limb to an equable temperature. Though many unforeseen events may take place in the treatment of amputations, and which indeed may thwart the designs of the surgeon, notwithstanding his most cautious circumspection, yet it must be generally acknowledged that a moderate and uniform state of atmospheric pressure is most conducive to the recovery of such operations. Mr. Griffiths, who had charge of the wounded at Fort Wellington, after the action at Ogdensburgh, in the spring of 1813, makes the following remark with regard to amputation:

> The piercing cold of winter was unfavourable to the recovery of those men upon whom I performed amputation. Every medical comfort appropriate for the state of the wounded was afforded me, but the hospital accommodations were certainly unfriendly to their general welfare. I found much difficulty in keeping up a uniform temperature in the apartments of the sick. The want of a thermometer was an unfortunate occurrence. The stoves by which the rooms were heated, were not supplied so regularly with fuel during the day or night as I could have wished.

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[12] The musca vomitoria (flesh fly) is said to lay 20,000 eggs. The larvae of three of these flies will consume the carcass of a horse as soon as a lion. For a classification of larvae, by Bergman, see Insecto-Theology, p. 339.

To the extremes of heat and cold I therefore attributed the protracted recovery of many of my patients; and were I again to be placed under similar circumstances I think I should regulate matters with more advantage to the wounded, and with more satisfaction to myself.

In cases of amputation, the divided muscles of a limb are sometimes prone to an unusual degree of retraction. A long and tedious transportation, immediately after the performance of the operation, the occurrence of secondary haemorrhage for which the dressings have been removed in order to secure the bleeding vessel, the presence of intermittent fever, and the careless application of the bandages at the subsequent dressings, may all have a tendency to produce it. Maggots, too, when allowed to remain in a stump, seem to operate as an immediate exciting cause to this involuntary action. Nor can it be denied that the presence of a number of ligatures in the living soft parts, which have included both nerves and blood-vessels at the moment of their application, so as to become a source of local irritation, may also have some share in the production of muscular retraction. It is well known that the irritability of the muscular fiber which in fact constitutes retraction, may act so far independent of the nerves as not to be connected with the consciousness of feeling, and that, even in the dead body it may exist for a considerable time, till at last the organization becomes dissolved. But it must likewise be confessed that its inordinate state of action is, to a certain extent, influenced by nervous excitement, for it appears to be increased by the stimulus of inflammation in the extremity of a divided nerve, and accordingly resembles that state of local inflammation which, in its turn, is considerably aggravated by a high grade of symptomatic fever.

By a proper and timely attention to the bandaging of a limb, the retraction of the muscles may often be prevented. The soft parts should be gently extended, while the circular roller is applied with a moderate degree of tightness, so as not to impede the circulation in the extreme vessels of the stump. When the pressure of the bandage is too great, secondary haemorrhage may take place, shortly after the performance of the operation. Attention should be paid at each future dressing, that no matter may lodge in those parts where union has not yet been completed. In the after-treatment of those cases of amputation in which too small a portion of muscular substance had at first been reserved to cover the extremity of bone other unfortunate consequences are to be dreaded from the injudicious application of the circular roller. Haemorrhage, inflammation, and a feeling of tension in the limb, which might at a former period have been the result of an inordinate degree of pressure, will not now be occasioned; but in their place may be produced the gradual consumption of the muscles by interstitial absorption. The bone may likewise protrude from the end of the stump; and the surgeon attributing these unfortunate occurrences to an unusual retraction of the muscles is daily led to stretch the soft parts more and more downwards and to circulate the bandage round the limb with a greater degree of tightness, by which means he increases an evil which he intended to counteract. To effect that degree of pressure by the application of a roller, so as to facilitate but not to prevent the union of vital parts, ought therefore to be the grand object of the surgeon.

Hospital gangrene made its appearance only in two instances. The subjects of its attack were debilitated in constitution, and had passed the middle period of life. In one patient it supervened to amputation below the knee, and ultimately proved fatal. In the other patient it invaded the gastrocnemius muscles, which had been severely lacerated by a canister shot, immediately above the tendo Achillis; and to preserve life amputation above the knee was carried into effect. The man survived the operation and had a tedious recovery. This disease was not marked by an uncommon degree of rapidity, nor was it so malignant in its nature as to infect the sores of the other wounded in the hospital. It was neither accompanied by fever nor by local inflammation. A fetid ichor was discharged from those parts over which it spread. At first the granulations were interspersed with ash-colored spots, which afterwards assumed a black appearance, but did not enter into a state of superficial incrustation. In the patient who died the consumptive progress of the disease was accompanied with a black putrid exudation, not unlike to dissolved blood. The internal administration of tonic medicines, with the external use of antiseptic applications, appeared to have no influence in checking its slow but fatal progress.

No case of tetanus came under my notice nor did I ever hear of the occurrence of this disease amongst the wounded in Upper Canada.

The wounded who were admitted into the church hospital, had all the advantages of a free ventilation. This building became extremely serviceable for the recovery of those men whose injuries were of a serious kind. From the pure air which the sick and wounded enjoyed in it, their progress to a state of convalescence was often rapid. Men whose wounds put on an unpromising aspect in the general hospital were at times transferred to this establishment. Intermittent fever, however, with all its fatality, prevailed in the latter, as well as in the former building.

In the "Recollections of the War of 1812" by Dr. William Dunlop, there is no mention made of any cases of influenza among the troops. Dr. Dunlop was one of the "forgotten heroes" of 1812. This name was a familiar one in the Upper Province during the first half of the century and he wrote many pamphlets and several other articles of interest. He also wrote the surgical part of "Elements of Medical Jurisprudence."[13] It is not generally known that Dr. Daniel Arnoldi passed some years in the Upper Province. He settled at the Bay of Quinte, at the end of the eighteenth century. The settlement at that time was almost a wilderness and called forth the greatest powers of endurance to meet hardships which only a young person with the most robust health could stand. For three years he toiled as physician to this settlement. With an allowance for food which would carry him over a day or so, he would start forth with his bark canoe, his rifle and axe, his instruments and medicines to visit his patients. When he came to a portage he carried his canoe on his head. With his instruments carefully adjusted about his person and his rifle in hand, he would walk and then reembark. We shall meet him again at Montreal.

Inoculation, which was brought into England in 1721, was said to be used in the Colony of Massachusetts in the same year, but the *Pennsylvania Gazette*, March 4, 1730, states "that Joseph Growden was the first patient of note who led the way to inoculation, recovering without any unfavourable symptom manifesting itself."

Franklin was one of the first not only to take it up, but also to advocate its use. Yet strange to say some years later he neglected having his boy inoculated and as a result lost him. He later became an enthusiastic advocate of inoculation and at his request Dr. William Heberden brought out a pamphlet in 1759 entitled "Some Account of the Success of Inoculation, and Plain Instructions for the Same." He distributed this at his own expense throughout the country.

The controversy raged in the Colonies as to the merits and demerits of inoculation, and nowhere more fiercely than in the city of Philadelphia. A number of pamphlets were published for and against it; Dr. Adam Thompson in 1750 wrote "On the Preparation of the Body for the Small-pox," which pamphlet was severely criticised by Dr. Kearsley in his pamphlet "Remarks on a Discourse on Preparing for the Small-pox." Dr. Alexander Hamilton then wrote one in favor of the former called "A Defence of Dr. Thompson's Discourse." In the year 1756 smallpox ravaged the city of Philadelphia to an alarming extent, showing that the prejudice against inoculation was still great. Dr. Laughlin Macleane brought out about this time his essay on "The Expediency of Inoculation and the Seasons Most Proper for It. Humbly Inscribed to the Inhabitants of Philadelphia."

The earliest inoculation in Canada was performed at Quebec in the year 1768 by a Mr. Latham, surgeon to the King's (or Eighth) Regiment of Foot. This was just forty-seven years after the first inoculation took place in London. The following notice was published in the *Quebec Gazette* in 1768:

To the Inhabitants of Quebec:—Mr. Latham, surgeon to the King's (or 8th) Regiment of Foot, acquaints the inhabitants of Quebec that before he left England he entered into partnership with Mr. Sutton for inoculation. The great success, and the many thousands Mr. Sutton has inoculated by his invention and new method, induced Mr. Latham to become his partner, in order that he might be of some use to mankind in this part of the world. Mr. Latham some days ago inoculated some soldiers belonging to the Regiment to which he has the honour to be surgeon, by which means he has procured sufficient infection for those who choose to be inoculated. All poor persons, who are not able to pay, and who are desirous of being inoculated, may apply to Mr. Latham, who will inoculate, attend, and give the medicine gratis. Mr. Latham practises midwifery. He is to be spoken to at his house upon the Battery, Upper Town.

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[13] Beck and Beck. Medical jurisprudence, Phila., 1838.

Twenty-nine years later the practice of inoculating had spread throughout Canada.[14] Surgeons were coming from distant parts of the country to obtain supplies of the vaccine. It was not an unusual thing for several inoculators to travel together throughout certain districts, their arrival being announced by the local papers, and always the announcement was made that the poor would be inoculated free of charge. The inoculation was, as a rule, performed during the winter or spring months.

Sir Frederick Haldimand, who was governor at this time, seems to have dreaded any experiments being made at the distant posts as is seen from the following letter dated Nov. 2, 1789:

> His Excellency, the Commander-in-Chief, having learned that Mr. Gill, Mate of the General Hospital, had been so imprudent as to take from Montreal to Carleton Island small-pox matter for the purpose of inoculation, I am directed to signify to you His Excellency's positive command that he may not be permitted to make use of it, but that it may be taken from him, and that you will yourself, see it buried so deep under ground as to prevent a possibility of its having any effect; and if unfortunately any use should have been made of it before you receive this, His Excellency desires you will send the Parties infected to the most remote part of the Island, with a guard to prevent all communications with them, for should this disease get amongst the Indians the consequences to them and to the King's Service would be very fatal. In all events the Intention must be carefully concealed from the Indians for if the infection should by any Accident make its way from Hence to them it would infallibly be attributed to that cause.

Then again in 1784 the Governor told Sir John Johnston, "he must be held responsible for the expenses of the provisions which were given to those Indians who brought their children to Montreal for inoculation."

In a short time however the practice was received more favorably and in a letter from Dr. Mervin North to Dr. Keats, dated at Quebec in 1796, he states:

> I do not despair of getting medicine this fall, but shall send requisition at the opening of navigation. Sends returns of the sick: the troops are healthy but the medical gentlemen in the upper posts are fully employed by the small-pox patients among the Indians. They were too much afraid of small-pox to allow of inoculation but they are now coming in crowds to the posts for the operation.

Although the introduction of inoculation into Canada was not attended with the antagonism it elsewhere created yet at times letters appeared complaining of the practice. For instance, in 1812 a Mr. Freedling wrote to the *Kingston Gazette* saying that a doctor, who "having no one to practise upon, induced one of his daughters to be inoculated for small-pox, by which the disease devastated the neighbourhood."

The only literature published in Canada on the subject at this time seems to have been a pamphlet written in 1815 by A. Macdonald, secretary for the "Institutions for Vaccine Inoculation."

Some years later we find the newly established Maternity Hospital at Montreal helping out their income by advertising in the local papers that they had "fresh vaccine and that country physicans might be supplied by addressing a letter to Mrs. Buchanan, matron of the Maternity, enclosing the sum of five shillings."

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[14] In 1802 Dr. Campbell mentions that Joseph Norman Bond, of Yarmouth, a veteran of the Revolutionary War, was the first to perform vaccination in Nova Scotia.

Mr. Wendell in his "Literary History of America" claims that Cotton Mather "was the first person in the English speaking world to practice inoculation for small-pox. As early as 1716 Mather announced his intent of employing inoculation when next the Pestilence should visit Boston." In a paper read before the Massachusetts Historical Society, by Kittredge, he described his identification of an anonymous tract on smallpox "printed in England in 1722 under the care of Jeremiah Dummer," as a long-lost treatise by Cotton Mather, referred to in the latter's diary.

Dr. W. R. Steiner mentions in his life of Dr. Edward North who was then living in Goshen, Connecticut:

> Dr. North was the first one to find a cow-pox pustule. This was undeniably the first example of the vaccine discovered, or kine-pox being found among the cows of this country. In May, 1801, a patient came to North complaining of chills, headache and fever. On examination a swelling under his arm was found and a sore on his hand which proved to be a cow-pox pustule, the patient having contracted it by milking the udder of an infected cow.

In Aubert de Gaspé's "Mémoires," there are some interesting facts concerning Dr. F. W. Oliva's practice.

> La picote faisait autrefois des ravages affreuses dans le Canada: on saignait à la plus grande chaleur et avec force foisson ceux qui étaient atteints de cette cruelle Maladie. Le docteur Oliva est le premier qui ait introduit une methode diametralement opposée. La vaccine n'etait pas alors découverte: et il avait soin d'inoculer óu le printemps prescrirant aux patients de sortir tous les jours. Je fus inoculé par lui à l'age de cinq ans, pendant le mois octobre et je faisais journellement plus d' une lieue en voiture.

Dr. Frederick William Oliva came to Canada about 1776, as one of the surgeons attached to a German regiment under Baron von Riedesel. After the war he settled finally at Quebec and seems to have been a clever and able practitioner. Aubert de Gaspé gives us an insight into his treatment of typhus and declares that he owes his life to the doctor's care during a childhood illness. He was lying very ill at home in the month of November with all the windows closed and a hot fire in the room. As soon as Dr. Oliva entered this hot room he threw open all the windows. At once the news spread that the doctor from Quebec was killing the child. At another time the doctor's son was down with the same dread disease. He ordered a bath of icy water to be brought into the room, into which he plunged the child and then, wrapping him in blankets, placed him in bed. The effect of this treatment astonished the people and renewed their confidence in him. He died July 31, 1796.

(*To be Concluded*)

[From Crooke's A Description of the Body of Man, London, 1631]

EDITORIAL

MONUMENTA MEDICA

We have received for review from the publishers, R. Lier & Company of Milan, a copy of their facsimile reproduction of Jenner's "An Inquiry into the Causes and Effects of the Variolæ Vaccinæ," accompanied by a prospectus of the "Monumenta Medica" which they are publishing and of which the Jenner is one. The publishers have conceived and are putting into execution a project which should meet with the heartiest support from the entire medical profession in all countries, because of its far reaching importance and its international character. The latter is well illustrated by the titles of the first three books which have been published and by the names of their editors. The first is the "Fasciculus medicinae" of Johannes de Ketham, 1491, edited with an introduction and notes by Karl Sudhoff, and translated and adapted by Charles Singer. Following it there have been issued "The Book of Cirurgia by Hieronymus Brunschwig," a reprint of the book published at Strasburg in 1497, with a study in English on Hieronymus Brunschwig and his work by Henry E. Sigerist, and Jenner's "Inquiry." This is a splendid start towards the accomplishment of the aim of the publishers which "is to make accessible to a wider circle of readers some of those monuments of medical science of which only a few copies now exist." In the United States where such works are even rarer than on the Continent or in Europe this is of the greatest importance. Outside of the Library of the Surgeon General there are few, even of the larger collections of medical books, which contain as many of the ancient medical classics as their importance demands, in spite of the vastly increased interest in them which has developed in recent years.

The publishers state that the "Monumenta Medica" will not be merely a series of reprints of medical classics but that each of the volumes will be carefully edited and annotated where necessary by acknowledged authorities. Each volume will be published simultaneously in an English and an Italian edition, and either a German or French edition. The series is under the general editorship of Dr. Henry E. Sigerist. The list of the volumes which it is proposed to publish later in the series includes the "Isagogæ breves" of Berengario da Carpi and the "Epitome" of Vesalius. Because of the editorship to which they will be submitted they will form invaluable additions to libraries of collectors who may be so fortunate as to possess the original works and they will be absolutely indispensable to those who do not possess them in any other form.

THE BLACK DEATH IN ENGLAND AND WALES, AS EXHIBITED IN MANORIAL DOCUMENTS

A most interesting study of the black death in England and Wales was presented by William Rees before the Section of the History of Medicine of the Royal Society of Medicine.[1]

The author begins with the statement that the theory of Thorold Rogers that the Great Pestilence was the chief cause of the agrarian revolution of the fourteenth century is erroneous, as shown by studies of manorial documents.

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[1] *Proc. Roy. Soc. Med.*, Lond., xvi, xii, Oct., 1923.

The black death is supposed to have begun in China in the first half of the fourteenth century and from thence spread through Persia and Mesopotamia to the land of the Saracens, thence into the Levant, the Balkans, and by way of the Mediterranean into Italy and France. The black death appeared in England in 1348 and Dr. Rees gives some very impressive figures to show how terribly fatal it was, but he concludes that though it was a factor in the social changes which marked the end of the fourteenth century, it was not quite so prominent in that respect as Rogers considered it, there being many other factors operating in the social and intellectual life of the time tending to bring about the social revolution.

THOMAS DAVIES, INTRODUCER OF THE EXPLORING NEEDLE

Dr. Arthur T. Davies has written a most interesting account[1] of his grandfather, Thomas Davies. The subject of this sketch was born in 1792 and had begun the practice of medicine in London when, having developed pulmonary tuberculosis, he was advised to seek a southern climate. He went to Paris for a year and then to Montpellier, where he studied two years, receiving the M.D. degree in 1821. He then went back to Paris and for two years worked in the Necker Hospital under Laënnec, with whom he seems to have been on intimate terms.

Returning to his native country he practiced in London where from his constant use of the then little-known stethoscope he received the sobriquet of "the man with the horn." In 1835 he published a book on the diseases of the lungs and heart in which he describes the exploring needle, which he was the first to use as a means of diagnosis. Dr. Davies reproduces his grandfather's account of the instrument and instructions for its use, which show a very accurate knowledge of its uses and limitations.

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[1] *Proc. Roy. Soc. Med.* XVI, viii.

CORRESPONDENCE

To the Editor:

It is probable that Jean Senebier, of Geneva, a famous naturalist and physiologist, is hardly known to the majority of medical historians and for this reason this short note is offered. He was born in Geneva in May, 1742, and died on July 22, 1809.

Jean Senebier
(1742–1809)
A half tone reproduction of the portrait given to the Public Library of Geneva by Edouard Diodaté in 1831. (Collection of Dr. Maillart-Gosse of Geneva.)

There is nothing of particular moment in Senebier's life to relate and I shall not refer to his many writings on philosophical and bibliographical subjects, although their importance is well known, so that only his physiological works will be recorded. In 1788, he wrote the section on "Vegetable Physiology" for the "Encyclopedie méthodique." A year previously (1777) he had published a French translation of Spallanzani's "Opuscoli di fisica animale i vegetabile," with an introduction giving the history of microscopical discoveries in the animal, vegetable and mineral kingdoms. This work was published in two volumes at Geneva.

Senebier's memoirs entitled "Expériences sur l'action de la lumière solaire dans la végétation," published at Geneva and Paris, in 1788, is a very important contribution to the subject, while in 1800 he published his splendid work in five volumes, "La physiologie végétale." Then in 1807 came his work in three volumes entitled "Rapports de l'air avec les êtres organisés."

The value of his writings is evident from the fact that Senebier was a member of most of the scientific bodies in Europe and he likewise enjoyed the esteem of all.

Charles Greene Cumston, m.d.
Geneva, Switzerland.

NOTE: By the courtesy of my friend D. H. Maillart, of Geneva I am able to reproduce a hitherto unpublished portrait of Senebier, belonging to his valuable collection. I take this opportunity to express to him my warmest thanks.

To the Editor:

In spite of the extensive literature bearing upon the early history of syphilis and especially upon the great outbreak just before the close of the fifteenth century, the subject is still shrouded in great uncertainty. It is of interest, therefore, to collect every contemporary reference to the subject.

I have found a reference in Depping's "Les Juifs dans le Moyen Age."[1] which is not mentioned in the standard histories of Bloch,[2] Proksch,[3] etc. The reference is to

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[1] Paris, 1834, p. 402, and germ. trans., Stuttgart, 1834, p. 314. Depping cites Beer: On the history of syphilis, Isis, Jena, 1826.

[2] Bloch, I. Der Ursprung der Syphilis, Jena, 1901.

[3] Proksch, J. K. Die Geschichte der venerischen Krankheiten, Bonn, 1895–1900.

Isaac Abrabanel's "Commentary on Zachariah.[4]

> And this shall be the plague wherewith the Lord will smite all the peoples that have warred against Jerusalem. Their flesh shall consume away while they stand upon their feet, and their eyes shall consume away in their sockets, and their tongues shall consume away in their mouth.

Abrabanel says:

> Our sages explained in the Midrash Tanhuma the meaning of "their flesh shall be consumed," saying that it denoted leprosy. . . . It appears that this is the sickness which has arisen anew in these times for formerly wise physicians never saw it nor knew of it. It is called the French Disease which is similar to leprosy and it only occurs among Gentiles and is not found among Jews.

Isaac Abrabanel[5] (1437–1508) was not a physician but was an eminent scholar and statesman, who left Spain during the exile of 1492 and settled in Italy. The exact date of the writing of this commentary is not known. His commentary on Isaiah was written 1495–98, that on Jeremiah, 1504. If he followed the order of the Biblical books, it must have been written between 1504 and 1508. Like other writers of the times he too describes this disease as having "arisen anew . . . formerly wise physicians never saw it nor knew of it." It is also of interest that he states that it "is not found among the Jews," for it has been charged that the marranos of Spain (secret Jews) spread this disease.

Bloch[6] cites Sigismondo da Foligno as the first who voiced this fiction. "It was spread not by the French but by the Maranos who were expelled by Ferdinand . . . ."

Leo Africanus[7] wrote:

> Of the disease (commonly called the Gallic disease) hardly so much as the name had been known to the Africans before these times when King Ferdinand drove all the Jews out of Spain; when these returned to their country, the wretched and vile Aethiopians began to have commerce with their wives, so that the pest spread throughout the whole region as if it had been strewn by hand in such manner that there is hardly a family which has remained free from the evil. In any case that is what they (i.e. the Aethiopians) firmly and unquestionably believe, namely that it came to them from Spain; and that is why they gave to that disease . . . just as through all of Italy it is called the Gallic disease.

This fiction has been long-lived. Based upon the writings of Gruner[8] and upon a note in Sprengel's earliest historical works (1793–1796), the fiction was revived and spread broadcast in more recent times by Hirsch,[9] Zeissl[10] and others. Sprengel himself, even, in the second edition of his classical work in 1800[11] showed that it was without historical foundation and Haeser[12] attributes Leo's statement to religious fanaticism.]

HARRY FRIEDENWALD, M.D.
Baltimore, Md.

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[4] Ch. 14, v. 12. For looking up the reference to Abrabanel, or its translation, and for other valuable information, I am indebted to my friend, Prof. Alexander Marx of New York.

[5] For an account of the life and works of Abrabanel see Jewish Encyclopedia, Vol. I. Bloch refers to him as "the renowned," who witnessed the sufferings of his brethren in Naples from the plague. *Op. cit.*, I, 247.

[6] *Op. cit.*, I, 246.

[7] Latin text cited in Graetz, H. History of the Jews, German Ed. 2, VIII, 353.

[8] Gruner: Die Maranen sind die wahren Stammväter der Lustseuche von 1493, Jena, 1792, and other works, cited by Notthafft: Die Legende von der Altertumssyphilis, Leipzig, 1907, p. 209.

[9] Hirsch, A. Handbuch der historisch-geographischen Pathologie, Erlangen, 1860.

[10] von Zeissl, H. Lehrbuch der constitutionellen Syphilis, Erlangen, 1864.

[11] Sprengel, K. Versuch einer pragmatischen Geschichte der Arzneikunde, Halle, 1792–1803, II, 655.

[12] Haeser, H. Lehrbuch der Geschichte der Medizin und der Volkskrankheiten, Jena, 1882, III, 258.

BOOK REVIEWS

INCUNABULA MEDICA: A Study of the Earliest Printed Medical Books (1467–1480). By Sir William Osler, M.D., Oxford University Press, 1923.

For many years Sir William Osler labored incessantly towards the compilation of a complete bibliography of medical incunabula, urging that all institutions or individuals owning such works should publish lists of them, and emphasizing on all occasions the great importance to medical historians and bibliographers of an accurate, and as extensive as possible, census of all early printed medical books. The volume under review is based on his presidential address to the Bibliographical Society in 1914.

It had been Sir William's intention to expand his address very considerably and to append to it a bibliography compiled by Mr. Scholderer. The onset of the War with its overwhelming burdens rendered it impossible for him to finish the work. In an interesting Preface, the manner in which the book has been brought to completion is briefly stated as follows:

> In the scanty leisure he could spare to it Sir William Osler had rewritten the earlier part of his Address, and put together the variant section which is printed as an Appendix. As noted above, he had never seen Mr. Scholderer's bibliography save in specimens, and the task of preparing his Address for printing has not been easy, written as it was from memoranda of various degrees of bibliographical authority, and never revised by its author. A natural disinclination to alter one word of the writing of so great a master had to be qualified by assurance that Osler himself cared keenly "to get things right," and with the united work of Dr. Malloch and Dr. Francis on the medical side and Mr. Scholderer on the typographical, such editing as was needed has been supplied. It should be needless to say that nothing has been added; and the fact that the Address has been expanded in some places and not in others leaves it as only a slightly revised draft of what Osler meant it to be.

The Address is written in Osler's best form. He begins by a most successful effort "to indicate the influence which the introduction of printing had upon medicine, to get, if possible, a mental picture of professors and practice at the time from the characters of books they thought it worth while to have printed," and goes on to demonstrate how the Arabic influence after having overshadowed for some centuries the Greek, had been completely overthrown as shown by the comparatively large number of the Arabian authors whose books were printed at the commencement of the art, only to be outnumbered by the Greeks a few decades later when the writing of Hippocrates became easier of access. Then follows a delightful résumé of our knowledge of purgation and bleeding calendars and other medical broadsides. These are not included in the bibliographical list as they are considered as having been adequately described by others.

Osler considers as incunabula only books printed before the close of 1480, not projecting the date as far as 1500, as Hain and some other bibliographers have done. He studies 182 editions of medical work representing sixty-seven authors. In the Bibliographical List the number has been increased to 217. The discussion of the authors and their books is most charming, sparkling with those wonderful touches of humor which Osler alone could impart to such a *catalogue raisonné*. In a brief Appendix is a most valuable description of some of the most important early "Synonyma, Dictionaries, Pandects, and Antidotaria."

The Descriptive List of Medical Books printed before 1481, which occupies the next section, is invaluable. It fully answers Sir William's ardent wish and we can imagine the pleasure it must have given him to feel that it was really under way. At the end of the volume are some most excellent facsimiles of interesting pages from incunabula. It is most unfortunate that this beautiful publication of the Bibliographical Society is privately printed and therefore not available to many who would wish to possess it, not only for the pleasure of reading and re-reading it, but as a valuable work of reference.

The Society is to be congratulated on the printing of such an appropriate memorial to one who would undoubtedly have appreciated it more than most.

FRANCIS R. PACKARD, M.D.

MONUMENTA MEDICA. Johannes de Ketham Alemannus, Fasciculus Medicinae, 1491. Facsimile of the First Edition, Venice, 1491. Introduction and notes by Karl Sudhoff, translated by Charles Singer. R. Lier & Company, Milan, 1923; Paul B. Hoeber, Inc., New York, 1923.

As is well known, a large number of the medical monographs of the greatest value to students of medical history exist only in a few medical libraries or in the collections of wealthy amateurs. This has meant that the study of these is frequently confined to those who have opportunities to travel or to those who have sufficient means to purchase photostatic copies. An undertaking which is worthy of the highest commendation is that of R. Lier & Company of Milan (7 Via Brera). They have started, under the general editorship of Prof. Henry E. Sigerist, to reproduce by photolithography works which are deemed by experts to be worthy of reproduction. The editor has been aided in his work by such scholars as Prof. Karl Sudhoff in Leipzig, Dr. Charles Singer in Oxford and Prof. Giovanni Carbonelli in Rome. It is the intention of the publishers to bring the books out simultaneously in an English and an Italian edition and either a German or French edition.

There has already appeared a most beautiful facsimile of the first edition of Edward Jenner's "An Inquiry into the Causes and Effects of the Variolae Vaccinae." This places this important monograph at the disposal of anyone who wishes it, at a very moderate price. The original edition, as is well known, has become extremely rare and even in large libraries is frequently wanting. It is only from time to time that a copy appears in the book trade. The facsimile edition very properly bears the date of 1923, which was the one hundredth anniversary of Jenner's death.

Another work reproduced in folio with 272 facsimile reproductions, edited by Sigerist, is "The Book of Cirurgia," by Hieronymus Brunschwig, Strassburg, Johann Grüninger, 1497. This volume also contains a study of the author and his work by the general editor of the series.

The further volumes will deal above all with the anatomical works of the Renaissance, with the precursors of Andreas Vesalius. The "Isagogae breves . . . in anatomiam humani corporis," of the Bolognese anatomist, Jacopo Berengario da Carpi, will appear soon. Vesalius himself will be represented by his "Epitome." Rare manuscripts such as the "Codex Neapolitanus" of Dioskurides and the "London French Surgery" of Roger with its lovely miniatures will rapidly follow.

In connection with the Monumenta a volume of illustrations bearing on the history of medical science will be published. These have been collected by Professor Sudhoff and Dr. Sigerist, and will place in convenient and easily accessible form the most important but very scattered material from ancient, medieval and Renaissance times.

The second volume of the Monumenta will contain a facsimile of the finest of all the editions of Ketham, namely the Italian version of 1493, a work of great artistic merit. This will be edited by Dr. Charles Singer and will also include an English translation of the anatomical treatise which appeared in that and subsequent editions.

The reprint of the first edition of Ketham is dedicated by Sudhoff to the late Gustav Klein of Munich. Sudhoff and Klein had planned to reproduce the 1491 edition in a series entitled "Alte Meister der Medizin und Naturkunde." Klein began a collection of woodcuts which exhibit the anatomy of the pregnant woman. Unfortunately this project was never carried out and after Professor Klein's death there was nothing found among his papers referring to the Ketham "Gravida." Klein's library and collections have been turned over to the Louvain University.

The first edition of Ketham was printed in 1491 by the brothers Giovanni and Gregorio dei Gregorii. These worthy printers migrated from Forli, which by the way was the birth and death place of Hieronymus Mercurialis. They established themselves at Venice and were engaged chiefly in the production of legal works, but they also printed a few medical books, The printing of this edition of Ketham marked a departure in the making of medical books. Up to this time illustrations had been confined to crude woodcuts, chiefly used in connection with calendars of venesection. There were also a few works illustrated with cuts showing the location of the veins. There were a few other illustrated works on medicine but this was the first attempt at reproduction of large plates to be used in teaching. The Ketham manuscript had been recopied many times and was evidently highly valued. This probably lead the brothers Gregorii to undertake its reproduction.

Of Ketham very little indeed is known. It is only by using a considerable amount of imagination that he can be connected, and probably with justice, with Hans von Kircheim, doctor of medicine and surgery in Vienna. His name occurs about sixty times in the records of the University between 1455 and 1470 where it undergoes a very considerable number of changes. One can easily imagine the following variants: Ketham, Karthan, Karchan, Ketheim, Kertheim, Kercheim. The interchanging of the "t" and "c" by medieval writers was very common and the appearance of the two letters in manuscripts is very similar. The name also occurs as Johannas de karthan in a booklet of medical biography written by Symphorien Champier (1472–1539?) the teacher of Michael Servetus. The 1491 edition was evidently prepared for the press some twenty years after the author's death and it also had evidently been enlarged upon by several additions by Georgius de Monteferrato, *artium et medicinae doctor*. There are several copies in manuscript of this work. These are to be found in Copenhagen, Heidelberg, Paris, Cambridge and Vienna.

The chief interest in the Ketham "Fasciculus" is in the plates, which have been very faithfully reproduced in the reprint. There are thirteen altogether, copied from the manuscripts in the various libraries mentioned above. The first plate which is reproduced in color is of a circle of urine glasses, a form of illustration very much in vogue in the Middle Ages. Next follow the phlebotomy and zodiacal figures. Plates of this type were in constant use by the medieval physicians and surgeons and as almost all of the thought of the Middle Ages was controlled by astrological ideas, such things as blood-letting and purging were carried out by rules based on astrologic lore. From 1458 onward in Germany there was issued yearly an almanac for venesection and purging. The plates of the vein man and the zodiacal man date from very early times, as they have been found in early Greek manuscripts, one at least with a note stating that it was from a Syriac original. The next plate is that of a pregnant woman in about the fifth month of pregnancy. Such figures of the anatomy of pregnancy are very widespread both in eastern and western manuscripts and figures of Persian origin are not uncommon. There is a plate of a "wound man" illustrating the various possible injuries to the human body with the legends *curabile* or *incurabile* according to their supposed gravity. Similarly there is a "disease man" showing the various ills to which human flesh is heir. The circle of urine glasses, the wound man and the disease man are apparently products of the West and apparently not met in early eastern literature. Cuts such as these were particularly popular in Germany and the plates used to illustrate the "Fasciculus" were derived from drawings widely used in Europe as separate diagrams during the fourteenth and fifteenth, and some during the thirteenth centuries.

It is a great pity that in getting out the reproduction it was not accompanied by a translation. There are exceedingly few of the many individuals interested in medical history whose familiarity with Latin is sufficient to cope with the difficulties involved in reading the writings of the medieval authors and this is also true of the legends accompanying the various plates. It would have been an exeedingly simple matter to have had each plate accompanied with a translation and to have had the text reproduced with the Latin on one page and the English or some other modern language translation on the opposite page. As Mr. Voynich once remarked at a meeting of the Medical Library Association, "We know almost everything about all the early printed medical books except what they are about." The work of rendering into one or more of the modern world languages of the early writings is one which should be carried out so that the student of medical history, whose linguistic talents have been left more or less undeveloped, will be able to trace for himself the various changes that have taken place in the teachings of his profession.

After all, however, both the editors and the publishers are to be congratulated upon rendering a real service to medical scholars and as this reproduction will eventually become very scarce, it behooves everyone interested to secure a copy while they are being sold at the market price. A medical library which does not avail itself of this privilege may be regarded as showing an exceeding lack of vision and foresight. Any future issues of the "Monumenta Medica" will be looked for with a great deal of interest.

JOHN RUHRÄH, M.D.

SELECTIONS FROM THE WORKS OF AMBROISE PARÉ, WITH SHORT BIOGRAPHY AND EXPLANATORY AND BIBLIOGRAPHICAL NOTES. By Dorothea Waley Singer. Medical Classics Series, John Bale, Sons & Danielsson, Ltd., London, 1924; William Wood & Co., New York, 1924.

No better evidence of the widespread awakening of interest in the historical aspects of medicine could be desired than the great increase in the number of books dealing with it which have recently appeared.

Of such publications there are two series of works now being brought out which warrant special attention: R. Lier and Company of Milan are publishing a series called "Monumenta Medica" which includes such works as the "Fasciculus Medicinae" of Johannes de Ketham, and Jenner's "An Inquiry into the Causes and Effects of the Variolae Vaccinae." These are splendid productions in facsimile of their originals and are sold at remarkably low prices considering what the cost of their production must be. The series is under the general editorship of Henry E. Sigerist. Another series, more modest in make-up but of immense value to the student, is the Medical Classics Series to which the "Selections from the Works of Ambroise Paré" is a most welcome addition. The series is under the general editorship of Charles Singer, the eminent historian of science, and this particular volume is edited by Dorothea Waley Singer. The book is preceded by a charmingly written Introduction, which is followed by Paré's dedication of his works to Henri III, and this by Book XI of the work, "Of Wounds Made by Gunshot." Next is reprinted Paré's "An Apologie and Treatise, Containing the Voyages Made into Divers Places" and, lastly, his "Surgical Aphorisms and Rules." The editor has reprinted the text from Johnson's English translation of Paré, the edition of 1634.

It must have been a task of some difficulty to make a choice of just what would be most interesting and valuable to reproduce from Paré's writings in the limits of a small volume. Everyone would, as a matter of course, pick out the "Apology and Voyages in Divers Places." It seems to us that the editor has chosen wisely in selecting in addition the treatise on gunshot wounds, for it is beyond doubt the most absolutely original of all the rest of Paré's writings, containing less material borrowed from other sources and more based on his own observations. As is well known in the parts of his works which deal with operations and other surgical procedures, Paré incorporated much that was not his own, particularly in his chapters on stone in the bladder. If the contents of this volume will stimulate the reader to peruse the discourse "On Mummy" and that on "Monsters and Prodigies," he will find a lot to amuse and interest but hardly enough scientific material to justify publication in a selection such as this.

The book is remarkably free from any errors in the text. In the Introduction in relating the captivity of Paré after the surrender of Hesdin the name of the Duke de Guise is twice used by mistake instead of the Duke of Savoy. Otherwise there is no criticism to be made in this direction. It is a most delightful volume which should be a library companion of every physician. The other volumes in Medical Classics Series which have thus far appeared include the well-known "Life of Lord Lister" by Sir Rickman Godlee, a very judicious selection from the works of Sydenham, and a delightful volume from and about Laennec. These books are very well produced and their moderate price places them within the reach of the most modest purse. The series should meet with the hearty welcome it deserves.

FRANCIS R. PACKARD, M.D.

THE HISTORY OF DOCTOR STEEVENS' HOSPITAL, DUBLIN, 1720–1920. By T. Percy C. Kirkpatrick. University Press, Ponsonby and Gibbs, Dublin, 1924.

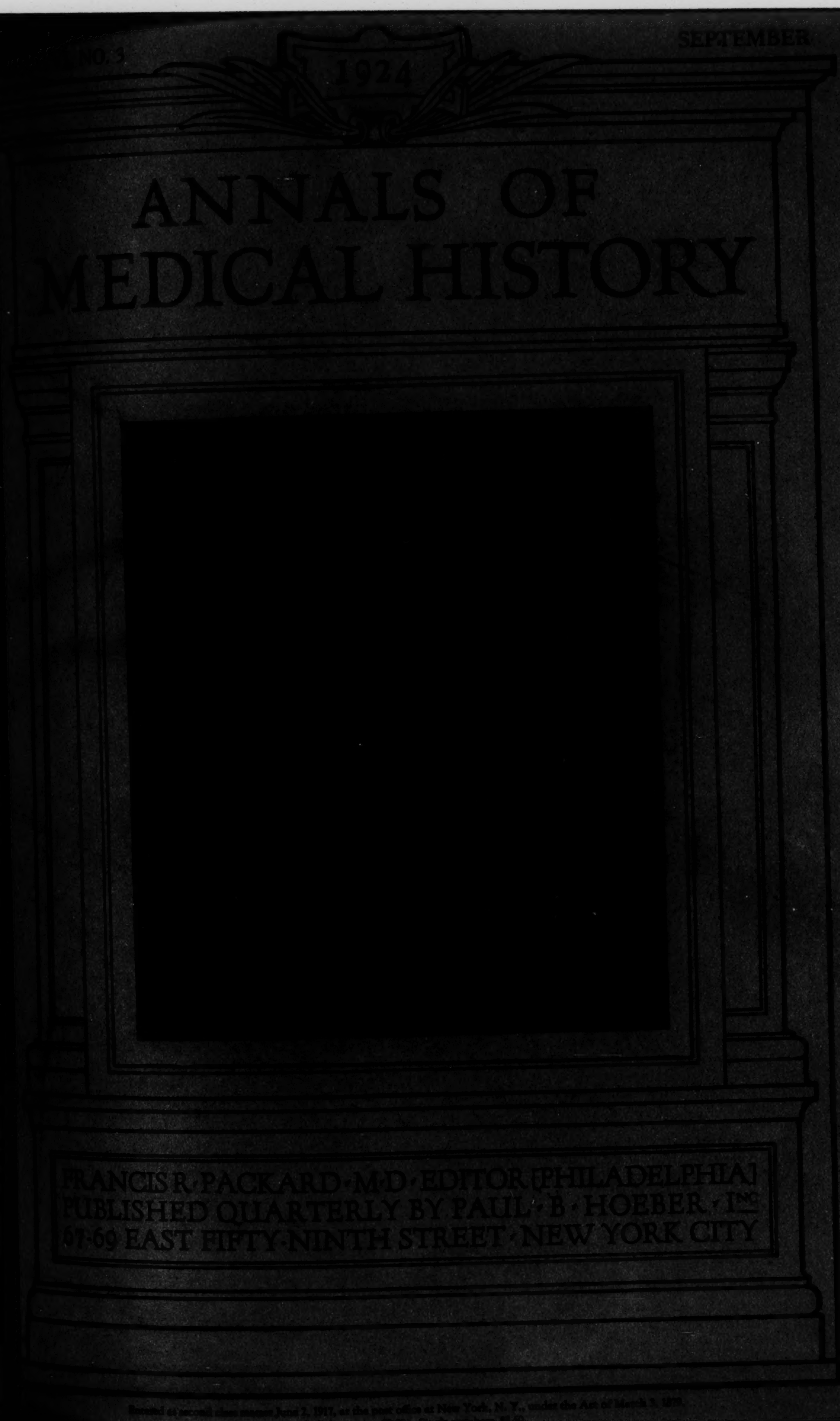
This very handsome volume contains a most interesting account of a very famous old Irish hospital, founded by money bequeathed for that purpose by Dr. Richard Steevens, who died in 1710.

In its long career of usefulness this hospital has had many distinguished men connected with it. Dean Swift was one of the first trustees and took a very active interest in its affairs. It is well known that Swift left his estate to found a "home for fools and mad." This purpose was carried out and the hospital for the insane, known as St. Patrick's Hospital according to the donor's instructions, was erected on a piece of ground granted by the governors of Dr. Steevens' Hospital. The two institutions still carry on their good work side by side on their original locations. Many distinguished physicians and surgeons have been members of the staff of the Dr. Steevens' Hospital, the most widely known today is probably Abraham Colles, who in 1814 published in the *Edinburgh Medical Journal* the description of the fracture of the distal end of the radius, which has ever since borne his name. The Irish medical profession had many other splendid clinicians, notably Stokes and Graves, in its ranks during the early years of the nineteenth century, and much of their success lay in the fact that they made good use of the facilities offered by the hospitals in which they worked. Medicine owes a great debt to the Meath Infirmary, the Dublin Rotunda and the Dr. Steevens' Hospital, and it is well that the history of these institutions should be preserved and made known.

Dr. Kirkpatrick has performed a service not only to the hospital whose history he has so ably compiled, but to the profession at large. Interspersed with the material relating to the hospital there are many interesting sidelights on the history of Ireland, especially in its social aspects, which well repay perusal.

FRANCIS R. PACKARD, M.D.

[ERASTUS: VARIA OPUSCULA MEDICA, FRANKFURT ON MAIN, 1590]



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Frontispiece
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IGNAZ PHILIPP SEMMELWEIS

[1818-1865]

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